FINAL
AFTER ACTION REPORT
TIME CRITICAL REMOVAL ACTION

TRICKLING FILTER
OLD WASTEWATER TREATMENT PLANT

WALLOPS FLIGHT FACILITY, VIRGINIA

Prepared for

UNITED STATES ARMY CORPS OF ENGINEERS

Norfolk District

Prepared by

WESTON SOLUTIONS, INC.
Raleigh, North Carolina

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LIST OF ACRONYMS AND ABBREVIATIONS

ATSDR	Agency for Toxic Substances and Disease Registry
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CNAAS	Chincoteague Naval Auxiliary Air Station
COC	Chain of Custody
DRO	Diesel Range Organic
ESCP	Erosion and Sedimentation Control Plan
ft	feet
FUDS	Formerly Used Defense Site
GRO	Gasoline Range Organic
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HEPA	High Efficiency Particulate Air
IMS	IMS Environmental Services
MCCs `	Maximum Concentration of Contaminants
MD	Maryland
mg/kg	milligram per kilogram
NASA	National Aeronautics and Space Administration
ng/m^3	nanograms per cubic meter
No.	number
OSHA	Occupational Safety and Health Administration
PA	Pennsylvania
PCE	Perchloroethylene (Tetrachloroethylene)
PPE	Personal Protective Equipment
PRG	Preliminary Remediation Goal
PRP	Principal Responsible Party
QA/QC	Quality Assurance/Quality Control
QC	Quality Control

LIST OF ACRONYMS AND ABBREVIATIONS (Concluded)

SAP	Sampling and Analysis Plan
SI	Site Investigation
SVOCs	Semivolatile Organic Compounds
TAL	Target Analyte List
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TCRA	Time Critical Removal Action
TPH	Total Petroleum Hydrocarbon
TSDF	Treatment, Storage, and Disposal Facility
USACE	U.S. Army Corps of Engineers
USDOD	U.S. Department of Defense
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
ug/L	microgram per liter
WESTON	Weston Solutions, Inc.
WFF	Wallops Flight Facility
WWTP	Wastewater Treatment Plant
Work Plan	Final Work Plan, Time Critical Removal Action, Old Wastewater Treatment Plant, Weston Solutions, Inc., May 4, 2006
VA	Virginia
VDCR	Virginia Department of Conservation and Recreation
VDEQ	Virginia Department of Environmental Quality
VOCs	Volatile Organic Compounds

EXECUTIVE SUMMARY

Weston Solutions, Inc (WESTON) has prepared this After Action Report for the U.S. Army Corps of Engineers (USACE) – Norfolk District for the Time Critical Removal Action (TCRA) completed at the site known as the Old Wastewater Treatment Plant (WWTP), located at the National Aeronautics and Space Administration's (NASA) Wallops Flight Facility (WFF), Accomack County, Virginia (VA). The TCRA addressed the release of elemental mercury from the Old WWTP Site's trickling filter structure and was required to prevent further migration of the mercury contamination. The remaining site structures and potential source areas (e.g., process tanks, drying beds, etc.) will be addressed during an upcoming Site Investigation (SI).

The Old WWTP Site is located within the Main Base (study area) of NASA's WFF. The Old WWTP was constructed by the Department of the Navy on approximately 0.75 acres of previously undeveloped land in the early 1940s, at which time the Navy began using the study area as a naval aviation training facility. The Old WWTP Site contains three cinder-block and concrete structures (control/pump house, process tanks [clarifiers], and sludge drying beds) and the trickling filter. The Navy closed the training facility in 1959, at which time NASA took custody of the study area. NASA abandoned the facility upon obtaining custody of the land and has not used the Old WWTP since transfer of ownership in 1959.

Previous environmental investigations conducted at the Old WWTP Site have identified residual sludge piles, located north of the Old WWTP facility buildings. In addition, the sludge drying beds also may contain residual sludge materials associated with former WWTP activities. The Old WWTP structures are partially degraded and overgrown with vegetation. A Principal Responsible Party (PRP) Analysis concluded that the U.S. Department of Defense (USDOD) and USACE should assume responsibility for the Old WWTP site and the surrounding area under the Formerly Used Defense Site (FUDS) program.

On December 9, 2005, USACE representatives conducted an on-site reconnaissance, in support of the upcoming SI to be conducted at the Old WWTP Site under the FUDS program. During the reconnaissance visit, beads of elemental mercury were discovered several inches below the

surface immediately adjacent to the center pedestal of the trickling filter's rotary arms. Just below the surface of the stone filter media, beads of elemental mercury were observed several inches from the pedestal.

Activities completed during the TCRA included the following:

- Excavation of the mercury-contaminated trickling filter stone.
- Sampling of the trickling filter stone for disposal characterization.
- Collection of free (elemental) mercury from within the trickling filter structure, and disposal and/or recycling of the free mercury.
- Sampling of the concrete for disposal characterization.
- Demolition of the trickling filter structure, with transportation of the nonhazardous demolition debris to an off-site disposal facility, Accomack County North Landfill.
- Transportation of the trickling filter stone to Accomack County North Landfill in Atlantic, VA, an off-site nonhazardous waste landfill for disposal.
- Trickling filter stone characterized as hazardous waste, as well as the trickling filter's mercury seal, were placed in labeled, lined-steel drums (three 55-gallon and one 85-gallon), and sent to Envirite of Pennsylvania (PA) in York, PA for recycling.
- Capping of the Old WWTP system piping encountered beneath the trickling filter structure during demolition.
- Sampling of soil under the trickling filter floor to confirm mercury removal.
- Backfilling and grading of excavated areas and completion of site restoration.

As part of the TCRA, WESTON collected four composite trickling filter stone media samples from discrete subsampling locations; six grab concrete chip samples from the trickling filter side walls, pedestal, floor and southern wet well; one grab sediment sample from the trickling filter's southern wet well; and one aqueous sample from standing water located inside the cistern of the pump house building.

Toxicity characteristic leaching procedure (TCLP) metals were not detected in the trickling filter stone samples at concentrations equal to or exceeding their respective TCLP Maximum Concentration of Contaminants (MCCs). Total mercury was detected in one sample at 2,120 milligrams per kilogram (mg/kg). TCLP metals were not detected in the concrete chip samples. Five target analyte list (TAL) metals (antimony, arsenic, iron, lead, and mercury) were detected in the sediment sample collected from the trickling filter's southern wet well at concentrations above their respective U.S. Environmental Protection Agency (USEPA) Region 9 Preliminary

Remediation Goals (PRGs) for Residential Soils (Note: USEPA Region III has not established generic remedial goals for metals). TCLP volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, herbicides or metals, and reactive cyanide and reactive sulfide were not detected in the aqueous sample collected from the standing water inside the pump house. In addition, results of corrosivity (pH), flash point, and paint filter tests on the aqueous sample indicated the standing water inside the pump house was not hazardous waste.

Based on the analytical results, seven roll-off containers containing trickling filter stone media and three roll-off containers containing demolished concrete were transported to Accomack County North Landfill for disposal as nonhazardous waste. The total amount of rock and concrete sent to Accomack County North Landfill was 91.42 tons. Three 55-gallon drums containing an estimated 1,916 pounds of trickling filter stone media visually contaminated with elemental mercury, sludge material (including approximately 5 pounds of spent MercSorb® and a limited amount of decontamination fluid) from the base of the trickling filter, and sediment from the southern wet well, were transported to Envirite of PA for disposal/recycling as hazardous waste.

The mercury seal was removed intact and placed in a lined 85-gallon drum. Recovered elemental mercury through vacuuming (approximately 7 to 8 pounds) was placed in sealed containers and containerized in the 85-gallon drum along with the mercury seal, spent high efficiency particulate air (HEPA) vacuum filters, and the detached lock valve. Personal protective equipment (PPE) and miscellaneous waste (other than the trickling filter tank materials) were containerized in three 55-gallon drums. The 85-gallon drum containing the recovered elemental mercury, mercury seal, spent HEPA vacuum filters, and the detached lock valve, and three 55-gallon drums containing the PPE and miscellaneous waste were transported to Envirite of PA as hazardous waste. The contents of the 85-gallon drum (467 pounds) were recycled/disposed, while the three 55-gallon drums containing the PPE and miscellaneous waste (269 pounds) were disposed in a hazardous waste landfill.

As part of the TCRA, WESTON collected five grab confirmatory soil samples, including a duplicate, from beneath the trickling filter's concrete floor, trench/underdrain system, and

southern wet well after demolition of the trickling filter tank. In addition, one grab sediment sample was collected from the confluence of two intermittent streams located north of the Old WWTP buildings, in order to determine whether contaminants had been transported to nearby wetlands and potentially to nearby surface water bodies.

TCLP metals, SVOCs, pesticides or herbicides, and reactive cyanide and reactive sulfide were not detected in a confirmatory soil sample submitted for full TCLP analyses. Concentrations of total mercury in the confirmatory soil samples ranged from 0.033 mg/kg to 1.3 mg/kg, well below the established mercury action level of 20 mg/kg. Except for arsenic, which was detected at concentrations ranging from 1.7 mg/kg to 2.6 mg/kg, other TAL metals were detected in the confirmatory soil sample and sediment sample at concentrations below their respective USEPA Region 9 PRGs for Residential Soils. Available background information indicates that the arsenic concentrations are the result of natural conditions at WFF.

Site restoration included activities needed to return the site to pre-mobilization conditions. Following completion of the TCRA, the bottom of the trickling filter tank area was backfilled to ground surface with certified and sampled non-impacted off-site borrow material. A geotextile liner fabric was placed in the excavation prior to backfilling to delineate virgin soil from clean fill. Top soil was placed and compacted on top of the backfill soil and on re-graded soil in the disturbed areas at the site. Following the placement of the topsoil, seed, straw mulch, and nutrients were applied to disturbed areas. The entrance, access road, and cleared area were left to remain in order to facilitate additional investigations (e.g., completion of the SI) at the site.

1.0 INTRODUCTION

Weston Solutions, Inc (WESTON) is submitting this Final After Action Report to the U.S. Army Corps of Engineers (USACE) – Norfolk District for the Time Critical Removal Action (TCRA) completed at the site known as the Old Wastewater Treatment Plant (WWTP), located at the National Aeronautics and Space Administration's (NASA) Wallops Flight Facility (WFF), Accomack County, Virginia (VA). The After Action Report was prepared under agreement with USACE, Norfolk District, under Contract Number (No.) DACW33-00-D-0007, Delivery Order No. EA01, Modification No. 01.

The purpose of this After Action Report is to describe the activities associated with the TCRA that the USACE conducted at the Old WWTP Site. The TCRA was required to prevent further migration of mercury contamination from the Old WWTP Site's trickling filter structure. This After Action Report presents WESTON's technical approach conducted during support activities associated with the TCRA for mercury and mercury-contaminated trickling filter stone, and the demolition and removal of the trickling filter structure at the site. Additional investigative efforts will be conducted at the remaining site structures (process tanks, drying beds, etc.), during the upcoming Site Investigation. This After Action Report, as well as other project documents and the technical approach, have been developed using guidelines and formats from a similar "model project" trickling filter TCRA completed in Williamsburg, VA in November 2003 (Baker, 2003; Baker, 2004).

1.1 Objectives and Scope of Work

Based on observed release, mercury and mercury-contaminated stone posed an immediate threat to human health and the environment. To eliminate the threat, the removal of this material was necessary. The TCRA was completed in accordance with WESTON's 4 May 2006 *Final Work Plan Time Critical Removal Action Old Wastewater Treatment Plant* (Work Plan) (WESTON, 2006). Activities completed during the TCRA included the following:

- Excavation of the mercury-contaminated trickling filter stone.
- Sampling of the trickling filter stone for disposal characterization.

- Transportation of the trickling filter stone to Accomack County North Landfill in Atlantic, VA, an off-site nonhazardous waste landfill for disposal. Trickling filter stone characterized as hazardous waste, as well as the trickling filter's mercury seal, were placed in labeled, lined-steel drums (three 55-gallon and one 85-gallon), and sent to Envirite of Pennsylvania (PA) in York, PA for recycling.
- Collection of free (elemental) mercury from within the trickling filter structure, and disposal and/or recycling of the free mercury.
- Sampling of the concrete for disposal characterization.
- Demolition of the trickling filter structure, with transportation of the nonhazardous demolition debris to an off-site disposal facility, Accomack County North Landfill.
- Capping of the Old WWTP system piping encountered beneath the trickling filter structure during demolition.
- Sampling of soil under the trickling filter floor to confirm mercury removal.
- Backfilling and grading of excavated areas and completion of site restoration.

Deviations from the Work Plan are discussed in Section 3.7 of this After Action Report.

1.2 Report Organization

WESTON prepared this After Action Report in general accordance with the U.S. Environmental Protection Agency's (USEPA) *Guidance for Performing Site Inspections Under CERCLA, Interim Final* (USEPA, 1992). The After Action Report is organized into five sections, including the following:

- Section 1.0 presents a brief introduction to the After Action Report objectives and format.
- Section 2.0 presents background information regarding the site. A site description and history of the Old WWTP are provided, including specific information regarding the trickling filter.
- Section 3.0 presents a discussion of the TCRA objectives and tasks completed.
- Section 4.0 presents the results of confirmatory soil sampling.
- Section 5.0 presents references used in developing the After Action Report.

Supporting figures and tables are located at the end of this report, after Section 5.0. Supporting information and documentation are provided in Appendices A through F of this report. Appendix A presents a copy of Field Notes. Daily Quality Control (QC)/Work Sheet Reports completed during the TCRA are presented in Appendix B. Appendix C presents a Photographic Log. Laboratory Analytical Reports and Chain-of-Custody Forms are presented in Appendix D. Waste Manifests and Disposal Documentation are presented in Appendix E. Appendix F provides copies of communications during the removal action effort.

2.0 BACKGROUND AND SETTING

The following sections present pertinent background information regarding uses of the site and a description of the site's setting.

2.1 Wallops Flight Facility Location and Status

NASA's WFF comprises three separate areas: Main Base, Wallops Island, and Wallops Mainland. The study area (Main Base) is situated on the Atlantic Coast of the Delmarva Peninsula, approximately 5 miles south of the Maryland (MD)/VA state boundary, and just to the west of Chincoteague Island. The Main Base is approximately 2,230 acres and is roughly bounded by Mosquito Creek to the north, Cedar Creek to the south, Simoneaston Bay to the east, and Wattsville Branch to the west. Wallops Island and Wallops Mainland are located approximately 7.5 miles southeast of the Main Base. An area-wide location map depicting the vicinity of WFF's Main Base is provided as Figure 2-1.

The Department of the Navy acquired the property in 1942 through condemnation in order to establish the Chincoteague Naval Auxiliary Air Station (CNAAS) as a training facility for WWII naval aviators. Prior to being developed for the CNAAS, this area principally consisted of farmland and marshes. Aerial photographs indicate that by 1943, various buildings and three runways were complete. Over the years, the mission of the facility changed numerous times. The three runways were modified and extended as needed with the changing mission. This resulted in the construction, expansion, and occasional abandonment of numerous associated structures and roadways. On January 26, 1946, the Naval Aviation Ordnance Test Station was established. In 1958, the National Aeronautics and Space Act established NASA. Although the Navy decided to shut down the CNAAS, the facility continued to operate until 1959, when it was officially closed. NASA took custody of the CNAAS facility on June 30, 1959, along with the Wallops Mainland area. Finalization of the transfer from the Navy did not take place until December 1, 1961. From 1959 to 1974, the area consisting of the Main Base, Wallops Island, and Wallops Mainland was known as Wallops Station. During this time period, activities in the study area were conducted in support of the Civilian Space Program. In 1975, the facility name was changed to Wallops Flight Center. Activities were expanded to include studies of ocean

processes. Noise reduction studies of aircraft on runways were conducted on the Main Base at the Wallops Research Airport. In July 1975, NASA excessed approximately 397 acres of land along the eastern extent of the Main Base to the U.S. Fish and Wildlife Service to establish the Wallops Island National Wildlife Refuge. In October 1981, Wallops Flight Center was consolidated with the Goddard Space Flight Center in MD and the name was officially changed to WFF. Since then, WFF has become NASA's primary facility for suborbital programs. The anticipated future use for WFF is to remain an industrial launch facility/airport.

2.2 Old Wastewater Treatment Plant

2.2.1 Site Description

The Old WWTP was constructed by the Navy in the early 1940s and is located northwest of the intersection of Runway 17-35 and the taxiway that parallels Runway 10-28. The Old WWTP Site is situated at the base of a moderate hill that consists of approximately 30 feet (ft) of topographic relief. The hill abuts the southern and eastern walls of the WWTP buildings. The area surrounding the WWTP comprises approximately 0.8 acres. The site consists of and is surrounded by dense vegetative cover, including woodland underbrush and young trees. Until completion of the TCRA, vehicular access to the site was restricted by the dense vegetative cover, and pedestrian access to the site was via an unpaved trail. A topographic map depicting the general location of the Old WWTP Site at WFF, Main Base is provided as Figure 2-2. In addition, an aerial photograph of the site is provided as Figure 2-3.

In general, the topography of the site slopes to the northwest. As a result, stormwater runoff from the site flows overland northwesterly and discharges into an intermittent stream (Figure 2-2). The stream conveys surface water northerly for approximately 0.4 miles before discharging into Little Mosquito Creek. Soil in the vicinity of the Old WWTP Site has been classified as Molena loamy sand (MoD), with slope gradients ranging from 6 to 35 percent. The Molena series consists of very deep, somewhat excessively drained soils on stream terraces of the Piedmont and Upper Coastal Plain. This soil typically exhibits slow-to-medium runoff and rapid permeability (USDA, 2006).

The site contains mounded material identified in previous investigations as residual sludge piles, located approximately 100 to 150 ft north of the WWTP facility buildings. In addition, the sludge drying beds also may contain residual sludge materials associated with former WWTP activities. The WWTP is no longer active, and the structures are partially degraded and overgrown with vegetation. NASA abandoned the facility upon obtaining custody of the land and has not used the WWTP since the transfer of the facility ownership in 1959. The Principal Responsible Party (PRP) Analysis concluded that the U.S. Department of Defense (USDOD) and USACE should assume responsibility for the Old WWTP and the surrounding area under the Formerly Used Defense Site (FUDS) program.

The WWTP consists of three cinder-block and concrete structures (control/pump house, process tanks [clarifiers], and sludge drying beds) and a trickling filter (see Figure 2-4). Influent to the WWTP flowed by gravity or pump stations to the head-works (control/pump house), where the flow was routed through a screening process before it entered the process tanks (clarifiers). Effluent from the clarifier in these processes flowed by gravity to the trickling filter, draining through the wet well into a cistern in the pump house before returning to the inlet side of the clarifier tanks. As a result, effluent from the trickling filter was re-circulated through the clarifier or a secondary clarifier to aid in the removal of the suspended solids. Once the effluent from the clarifier had undergone significant treatment in the trickling filter process, the effluent was discharged, and the sludge from the clarifiers discarded to the sludge drying beds.

2.2.2 Trickling Filter-Specific Information

On December 9, 2005, USACE representatives conducted an on-site reconnaissance, in support of an upcoming Site Investigation (SI) to be conducted at the Old WWTP Site under the FUDS program. During the reconnaissance visit, beads of elemental mercury were discovered several inches below the surface immediately adjacent to the center pedestal of the trickling filter's rotary arms.

While inspecting the trickling filter, a clogged and uncapped pipe was noted in the location where the seal drain should have been. The drain pipe appeared to be clogged with a rusty sludge material. Just below the surface of the stone filter media, beads of elemental mercury

were observed several inches from the pedestal. The detached locked drain valve was also found lying on the ground nearby.

The trickling filter was 24 ft in diameter. A 1-to-2-inch diameter stone filter media was bedded in the filter to a depth of approximately 4 ft, and an under drain system existed below the filter media.

The trickling filter, Serial No. 7828, was manufactured by Dorr-Oliver, Inc. during the early 1940s. According to a Dorr-Oliver representative, the seal on the rotary distributor at the center pier filter contained 11.5 pounds of mercury. Mechanical plans for an identical, but larger (48-ft diameter), filter were acquired by the USACE (Figures 2-5 through 2-7). These plans show the pedestal in detail as it appeared in the field. The drain from the filter passed through a wet well located immediately south of the trickling filter's wall into a cistern in the pump house.

3.0 REMOVAL ACTION

The TCRA at the Old WWTP Site was conducted from May 8, 2006 through May 19, 2006, and May 30, 2006 through June 1, 2006. A timeline of major events that occurred during the TCRA is presented on Table 3-1. The purpose of this section is to define the objectives of the TCRA and associated sampling activities.

3.1 Scope and Goals of the Removal Action

The TCRA provided a cost-effective means of meeting the overall project goal, which was the protection of human health and the environment. The TCRA provided protection by:

- Eliminating or significantly reducing the potential for human exposure to mercury and mercury contaminated material through direct contact.
- Eliminating or significantly reducing the potential for human exposure to inhalation of vapors.
- Eliminating or significantly reducing the potential for human exposure due to ingestion (via hand-to-mouth contact).
- Eliminating or significantly reducing the future possibility of contaminants leaching to groundwater or being transported to the wetlands and potentially to Little Mosquito Creek (via surface water and/or sediment).

In terms of contaminant reduction, the scope of the TCRA was as follows:

- Removal of elemental mercury and potentially mercury-contacted trickling filter stone media from the trickling filter.
- Removal of the concrete trickling filter structure and wet well.
- Capping existing steel piping of the system beneath the trickling filter structure.

3.2 Description of the Removal Action

The major items associated with the TCRA included:

- Decontamination and removal of mercury-contacted trickling filter stone media from within the trickling filter structure.
- Collection of free elemental mercury from within the trickling filter structure.
- Transportation of the elemental mercury, used mercury spill cleanup powder, and potential remaining mercury-contacted trickling filter stone to an off-site hazardous waste disposal/recycling facility, as appropriate.
- Demolition of the concrete trickling filter structure.
- Transportation of the non-impacted stone and concrete demolition debris to an off-site nonhazardous disposal facility.

- Confirmatory sampling of soils underlying the trickling filter structure prior to backfilling.
- Capping ends of existing steel pipes beneath the trickling filter structure to stop in-flow of water.
- Backfilling the trickling filter area to restore/improve ground conditions to match the surrounding topography.

General procedures for the TCRA were:

- Installation of erosion and sediment control measures (silt fence), as outlined in the Erosion and Sedimentation Control Plan (ESCP), as required by the Virginia Department of Conservation and Recreation (VDCR), Division of Soil and Water Conservation's *Virginia Erosion and Sedimentation Control Handbook* (VDCR, 1992). The ESCP was presented as Appendix C in the Work Plan (WESTON, 2006).
- Removal of the rotary distributor arms and screening of sediment in the distribution arms for the presence of mercury with a portable mercury vapor analyzer (Lumex® Model RA-915).
- Removal of the mercury seal on the rotary distributor at the center pier. Available information indicated that the seal originally contained 11.5 pounds of mercury.
- Delineation of two zones within the trickling filter: Zone 1 and Zone 2. Removal of trickling filter stone began from working from the outside of the trickling filter tank inward. Trickling filter stone from Zone 2 was delineated as the area outside a 5-ft radius of the pedestal to the trickling filter tank wall. Zone 1 included the inner 5-ft radius area around the pedestal (see Figure 2-8). **Note:** the Zone designations were reversed in the Work Plan (WESTON, 2006).
- Visual inspection and scanning the rotary distributor pier with a portable mercury vapor analyzer above the trickling filter stone and beginning 5 ft away from the pier out to the trickling filter tank wall (Zone 2). Gradual removal of trickling filter stone starting at 5 ft beyond the pier and progressing towards the trickling filter tank wall at a slope until reaching the bottom near the outer edge of the structure. Placing the trickling filter stone in a lined roll-off container used to store the stone on-site and for transport to the selected disposal facility. Each roll-off container was covered to prevent rain or debris from collecting in the roll-off container.
- Visual inspection and use of a portable mercury vapor analyzer to scan the remaining trickling filter stone within the trickling filter, within 5 ft from the center pier, for the presence of mercury (Zone 1). The trickling filter stone found not to be impacted was placed in lined roll-off containers with the trickling Zone 2 filter stone initially removed from trickling filter structure. The trickling filter stone found to be impacted with mercury was cleaned with a mercury amalgamation powder (e.g., MercSorb®) and/or a mercury vacuum (discussed below) and then placed in lined 55-gallon drums until sampling and off-site disposal/recycling was arranged.

- Removal of visible elemental mercury from the trickling filter stone and concrete trickling filter structure as follows:
    - Removal of the rotary distributor seal chamber as a unit and placement in a lined 85-gallon steel drum, appropriate for transportation to a recycling/recovery facility.
    - Air monitoring with a portable mercury vapor analyzer (Lumex® Model RA-915) was conducted as needed to assess conditions within the work area and within 20 ft downwind of the work area.
    - Access to and from the trickling filter was secured. Only Occupational Safety and Health Administration (OSHA) (Hazardous Waste Operations and Emergency Response Standard [HAZWOPER])-certified personnel dressed in appropriate level Personnel Protective Equipment (PPE) and Level C respiratory protection were permitted in the work area (the trickling filter and adjacent support area).
    - In the area directly beneath the rotary distributor seal, mercury cleanup/collection began by hand sorting and screening through the trickling filter stone with a mercury vapor analyzer to examine for mercury presence. If mercury was visible, a specialty vacuum for collecting liquid mercury and granular mercury compounds (mercury vacuum) was used to collect as much of the mercury as possible. Mercury vacuums are designed with a High Efficiency Particulate Air (HEPA) filter for capturing particles and an activated carbon adsorbent filter for purifying exhaust air of mercury vapors. In some cases, the mercury had adsorbed onto the stone and the stone was then placed into lined 55-gallon drums for hazardous waste disposal (drum Nos. 6-8). A mercury amalgamation powder was applied to the trickling filter stone in cases when elemental mercury was not visible but readings on the portable mercury vapor analyzer indicated the presence of mercury.
    - Storage of elemental mercury, used sponges and powder in an appropriately labeled 85-gallon drum. The container storing these waste materials were tightly lidded and securely stored until transported off site for appropriate disposal.
- Placement of cleaned trickling filter stone into a backhoe bucket (lowered inside the trickling filter structure) and placement in lined roll-off containers for characterization and appropriate disposal.
- Completion of mercury recovery from the concrete trickling filter floor, walls and distributor support pier using the mercury vacuum and absorbing powder.
- Collection of confirmation concrete chip samples from the trickling filter side walls and/or floor, and collection of suspect contaminated trickling filter stone samples for mercury analysis. This included six concrete chip samples and four stone filter samples. A summary of the sampling and analytical program performed during the TCRA are presented in Table 3-2.
- Secure on-site storage of material for recycling/disposal.
- Transportation of material to an off-site approved facility for recycling/disposal, as appropriate.
- Locating the remaining pipes and cap off the ends of each pipeline by plugging with concrete to prevent additional water from entering/exiting the pipes.

- Completion of confirmatory soil sampling following removal of the trickling filter. This included five soil samples, including a duplicate, collected from beneath the trickling filter structure site. In addition, one soil sample was collected from backfill material used to fill the trickling filter excavation. A summary of the sampling and analytical program performed during the TCRA is presented in Table 3-2.
- Regrading the area using non-impacted backfill to provide positive slopes from the former trickling filter site, in accordance with the ESCP.
- Decontamination for personnel upon exiting the trickling filter. The decontamination consisted of a boot wash station, followed by removal of outer clothing (i.e., PPE) and placement in a drum staged inside the trickling filter for use as a satellite accumulation container. Respiratory equipment decontamination waste (spent cleaning fluid or wipes) was also stored in an appropriate container also staged inside the trickling filter.
- In general, the tricking filter tank was covered with a tarp overnight during the TCRA and when work was not being conducted to prevent rain and/or debris from collecting in or coming in contact with the trickling filter tank or its contents. It is noted that there was a variance of this procedure on May 10, 2006, as indicated in Section 3.7 of this report.

3.2.1 Site Setup and Preparation

Prior to beginning site preparation and intrusive work activities, WESTON requested a utility mark out that was conducted by WFF Facilities Management Branch personnel to verify the locations of utilities. Permit No. 1424 was issued for the excavation.

On May 8, 2006, WESTON and its subcontractor, IMS Environmental Services (IMS) of Norfolk, VA, mobilized to the site to begin site set up and preparation activities, including installation of silt fencing, constructing an access road, establishing a decontamination pad, equipment lay down areas, and storage areas for roll-off containers.

Prior to initiation of site activities, NASA personnel cleared trees and underbrush to gain vehicle/heavy equipment access to the site and to establish a temporary gravel access road and work area. Approximately 120 tons of gravel and crush n' run were obtained from an off-site supplier and compacted to create a temporary access road suitable for heavy equipment and trucks/roll-off containers. The road was constructed to access the site from the taxiway that parallels runway 10-28. The length of this access road was approximately 250 feet.

3.2.2 Removal Action Tasks

In general, the TCRA included the following steps:

- Removing the stone filter media and elemental mercury from the trickling filter tank.
- Removing the rotary distributor mechanism/arms and removal of the mercury seal on the rotary distributor at the center pier.
- Cleaning the surfaces of the concrete trickling filter tank and trench/underdrain system in the bottom of the tank.
- Demolishing /removing the concrete trickling filter tank structure.

These activities are discussed in the following sections.

Rotary Distributor Mechanism and Mercury Seal Removal

On May 9, 2006, the upper steel pedestal and two rotary distribution arms were removed and inspected to determine if elemental mercury remained in the seal. Sediment/soil in the distribution arms and pedestal equipment was removed and scanned for the presence of mercury using a portable mercury vapor analyzer. Readings were not recorded above background levels. On May 17, 2006, the mercury seal portion of the rotary distributor at the center pier was removed and placed in a U.S. Department of Transportation (USDOT)-approved 85-gallon drum for shipment off site as hazardous waste.

Stone Filter Media and Elemental Mercury Removal

Two zones (Zone 1 and Zone 2) were delineated inside the trickling filter, working from the outside of the trickling filter inward. Stone from Zone 2 was delineated as the area outside a 5-ft radius of the center pedestal to the trickling filter wall. Zone 1 included the inner 5-ft radius area around the pedestal. Beginning on May 10, 2006, stone trickling filter media was gradually removed with a backhoe bucket, beginning in Zone 2. Stone within Zone 1 of the trickling filter was hand-sorted when mercury vapor analyzer readings indicated the presence of mercury. Each backhoe bucket load of stone was visually inspected and screened with a portable mercury vapor analyzer to ensure that it was not impacted. Stone that did not have apparent mercury impact was loaded into lined roll-off containers (roll-off container Nos. 1-6) for characterization and

disposal as nonhazardous waste. The roll-off containers were covered after completion of work each day to prevent rain and/or debris from collecting in the containers. This stone was assumed to be not impacted and appropriate for nonhazardous disposal, pending laboratory analysis.

During removal of the stone trickling filter media, visible elemental mercury on the stone, top/sides of the center pedestal and/or in pools on the concrete floor adjacent to the pedestal was recovered using a mercury HEPA vacuum. A mercury amalgamation powder (MercSorb®), was applied to the trickling filter stone in cases when elemental mercury was not visible but readings on the portable mercury vapor analyzer indicated its presence. Confirmation of effective removal was accomplished by screening with the portable mercury vapor analyzer and comparing to background. Decontamination mixtures and stone and sludge/sediments impacted with mercury that couldn't be effectively decontaminated were placed in USDOT-approved 55-gallon drums for full waste characterization and off-site disposal/recycling as hazardous waste. An estimated 7 pounds of mercury was recovered with the vacuum during the TCRA. This mercury was placed in a sealed container which was then containerized in the 85-gallon drum along with the mercury seal for off-site disposal/recycling as hazardous waste.

On May 10 and 12, 2006, during removal of the stone trickling filter media, screening of some stone exhibited readings on the portable mercury vapor analyzer at concentrations significantly above background levels and above the action level. Stone found to have visible mercury contamination that could not be removed with the vacuum was placed in USDOT-approved 55-gallon drums. Some stone that did not have visible mercury contamination yielded readings above background levels on the mercury vapor analyzer. In an effort to allow some of the entrained mercury vapors trapped between the stones to disburse prior to placement in a roll-off container or drum, this stone was not immediately containerized. After re-screening this stone with the portable mercury vapor analyzer, vapor levels had returned to near background and the stone was placed in roll-off container No. 7 only.

Removal of the trickling filter stone media was completed on May 16, 2006. Following removal of the stone filter material, the backhoe bucket was decontaminated by washing/scrubbing with MercSorb®.

Cleaning of Trickling Filter Tank and Trench/Underdrain System

On May 16, 2006, following removal of the trickling filter stone media, the underdrain system was removed. During this process, elemental mercury was vacuumed and removed. The underdrain system was removed to expose the concrete bottom of the filter tank. Clay tile, piping, steel, sludge, and sediment removed from the underdrain system was screened for mercury and containerized in USDOT-approved 55-gallon drums for off-site disposal/recycling as hazardous waste. Concrete grates covering the trench were cleaned by scrubbing MercSorb®, followed by placement in roll-off container No. 8.

Concrete Trickling Filter Tank Structure Cleaning/Demolition/Removal

On May 17, 2006, the surfaces of the concrete trickling filter tank were cleaned by scrubbing with water and MercSorb®. The concrete trickling filter tank structure was visually inspected prior to demolition to ensure that there was not visible evidence of elemental mercury. Visible evidence of mercury was not identified. As a result, the rotary arm base was removed and placed in the 85-gallon drum for off-site disposal/recycling. The concrete pedestal pier was demolished first, followed by the main trickling filter tank and the wet wells attached to the trickling filter. Demolition of the trickling filter was completed on May 19, 2006. Demolished concrete from the trickling filter tank and wet wells was placed in three roll-off containers (Nos. 8-10).

Following demolition/removal of the trickling filter tank structure, the inflow and outflow pipes were screened with a mercury vapor analyzer. Readings above background levels were not detected. As a result, the pipes were plugged with concrete at the limits of the excavation.

3.3 Health and Safety

The TCRA was conducted in accordance with the Site Health and Safety Plan (HASP), which was presented as Appendix B in the Work Plan (WESTON, 2006).

A pre-entry health and safety briefing was conducted for on-site personnel prior to the removal activities. On-site personnel reviewed that HASP and indicated their understanding, agreement to, and conformation to the information set forth in the HASP (and attachments) and discussed in the personnel health and safety briefing by signing the HASP approval/signoff form. Daily health and safety briefings were conducted prior to the initiation of work activities.

General site activities (such as mobilization and demobilization), removal of the stone filter material, demolition of the trickling filter tank, and confirmatory soil sampling were conducted in Level D or Level D Modified protection. Level D protection included normal work clothes or coveralls, work gloves and/or surgical (e.g., Nitrile) gloves, steel-toed safety boots, safety glasses, and hard hat. Level D Modified protection included chemical resistant clothing (Saranex-coated TyvekB), inner surgical gloves and outer chemical resistant gloves, steel-toed boots, chemical resistant over boots, and hard hat. Decontamination of the trickling filter tank and other associated tasks that required entry into the exclusion zone or CRZ were conducted in Level C protection, which included a full-face air-purifying respirator with mercury vapor cartridges, chemical resistant clothing (Saranex-coated TyvekB), inner surgical gloves and outer chemical resistant gloves, steel-toed boots, chemical resistant over-boots, and hard hat.

Personal air monitoring directed at the breathing zone and perimeter air monitoring was routinely conducted using a portable mercury vapor analyzer (Lumex® Model RA-915). WESTON conducted continuous air monitoring on the perimeter of the exclusion zone, while IMS personnel conducted continuous air monitoring inside the exclusion zone. Upgrade in the level of health and safety protection or engineering controls was not required based on the results of the air monitoring program.

3.4 Confirmatory Soil Sampling and Laboratory Analysis

The following paragraphs present a summary of the confirmatory soil sampling and laboratory analysis implemented during the TCRA. A summary of the sampling and analytical program is presented on Table 3-2. Confirmatory soil samples collected from beneath the trickling filter are illustrated on Figure 3-1.

On May 18 and 19, 2006, after demolition of the trickling filter tank, four grab soil samples (WFF1-TCRA-SS-01; WFF1-TCRA-SS-02; WFF1-TCRA-SS-04; and WFF1-TCRA-TCLP-SS-03) were collected from beneath the trickling filter's concrete floor, trench/underdrain system, and southern wet well (Figure 3-1). In addition, one duplicate sample (WFF1-TCRA-SS-02-D) was collected as a Quality Assurance/Quality Control (QA/QC) measure of field sampling procedures. Sample WFF1-TCRA-SS-02-D was a duplicate of sample WFF1-TCRA-SS-02. The soil samples were collected directly from the ground and were placed into laboratory-supplied sample containers, stored on ice in coolers at approximately 4 degrees Celsius (or less), and delivered by Federal Express to GPL Laboratories in Frederick, MD. Chain-of-Custody (COC) forms (located in Appendix D) were completed and enclosed in the shipping packages.

Samples WFF1-TCRA-SS-01; WFF1-TCRA-SS-02; WFF1-TCRA-SS-04; and WFF1-TCRA-SS-02-D were analyzed for target analyte list (TAL) metals. Sample WFF1-TCRA-TCLP-SS-03 was analyzed for full toxicity characteristic leaching procedure (TCLP) analyses, including volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, herbicides, and metals, and reactive cyanide and reactive sulfide. Analytical results of confirmatory soil samples are discussed in Section 4.0 and summarized in Table 4-1.

3.5 Waste Handling, Transportation, and Disposal

The following section present a summary of the waste handling, transportation, and disposal procedures implemented during the TCRA. A summary of the sampling and analytical program is presented on Table 3-2. A summary of the laboratory analytical results for waste samples is presented on Tables 3-3 and 3-4, and the laboratory reports are included in Appendix D.

Zone 1 and Zone 2 Stone Trickling Filter Media

On May 17, 2006, one composite sample of trickling filter stone media was collected from roll-off containers Nos. 1 through 6 (WFF1-TCRA-TCLP-R1-6) and one composite sample of trickling filter stone media was collected from roll-off container No. 7 (WFF1-TCRA-TCLP-R7). On May 19, 2006, one composite sample of trickling filter stone media was collected from 55-gallon drum Nos. 1 through 5 (WFF1-TCRA-TCLP-DR1-5) and one composite sample of trickling filter stone media was collected from 55-gallon drum Nos. 6 through 8 (WFF1-TCRA-TCLP-DR6-8). The samples were collected directly from the stone and were placed into laboratory-supplied sample containers, stored on ice in coolers at approximately 4 degrees Celsius (or less), and delivered by Federal Express to GPL Laboratories in Frederick, MD. COC forms (located in Appendix D) were completed and enclosed in the shipping packages.

A summary of the sampling and analytical program is presented on Table 3-2. The samples were analyzed for TCLP metals. In addition, sample WFF1-TCRA-TCLP-DR6-8 was analyzed for total mercury for disposal requirements. The analytical results of the samples were used to characterize and determine the most appropriate disposition of the Zone 1 and Zone 2 stone (i.e., disposal as nonhazardous waste). TCLP analytical results of trickling filter stone samples were compared to the Maximum Concentration of Contaminants (MCCs), as listed in Table 1 of 40 CFR, Subpart C, Part 261.24.

A summary of the trickling filter stone analytical results is presented in Table 3-3, and the laboratory analytical reports are included in Appendix D. TCLP metals were not detected in the trickling filter stone samples at concentrations equal to or exceeding their respective TCLP MCCs. Total mercury was detected in sample WFF1-TCRA-TCLP-DR6-8 at 2,120 milligrams per kilogram (mg/kg).

Since analytical results from the sample collected from trickling filter stone media in 55-gallon drum Nos. 1 through 5 showed nonhazardous characteristics, the contents of these drums were transferred to roll-off container No. 2. Between May 30 and June 1, 2006, roll-off container Nos. 1 through 7 were transported to Accomack County North Landfill for disposal as

nonhazardous waste. The total tonnage of trickling filter stone media disposed as nonhazardous waste is estimated at approximately 64 tons. On July 17, 2006, 55-gallon drum Nos. 6-8 were transported to Envirite of PA for disposal/recycling as hazardous waste. The total tonnage of trickling filter stone media disposed as hazardous waste was 1,916 pounds, including sludge material and decontamination fluid. The waste manifests and disposal documentation are included in Appendix E.

Concrete Trickling Filter Tank Structure

On May 17, 2006, six concrete chip samples were collected from the trickling filter side walls, pedestal, floor and southern wet well:

- Sample WFF1-TCRA-TCLP-F1 – collected from the base/floor of the trickling filter tank, approximately 8 ft north-northwest of the pedestal.
- Sample WFF1-TCRA-TCLP-F2 – collected from the base/floor of the trickling filter tank, approximately 8 ft north-northeast of pedestal.
- Sample WFF1-TCRA-TCLP-W1 – collected from the midpoint of trickling filter tank wall, approximately 1-ft east of northern trickling filter wet well.
- Sample WFF1-TCRA-TCLP-PED – collected from the southern vertical face of the pedestal.
- Samples WFF1-TCRA-TCLP-T1 – collected from the western vertical face of the southern trench/underdrain system, capturing both original concrete pours.
- Sample WFF1-TCRA-TCLP-WW1 – collected from the base of the southern trickling filter wet well.

Concrete chip samples collected from the trickling filter are illustrated on Figure 3-1.

A summary of the sampling and analytical program is presented on Table 3-2. The samples were analyzed for TCLP metals. The analytical results of the samples were used to characterize and determine the most appropriate disposition of the demolished concrete (i.e., disposal as non-hazardous waste or reuse/recycling). TCLP analytical results of the concrete chip samples were compared to the MCCs, as listed in Table 1 of 40 CFR, Subpart C, Part 261.24.

A summary of the concrete chip analytical results is presented in Table 3-3 and the laboratory analytical reports are included in Appendix D. TCLP metals were not detected in the concrete chip samples. Therefore, the demolished concrete in roll-off containers Nos. 8 through 10 was

considered nonhazardous waste. Between May 30 and June 1, 2006, roll-off container Nos. 8 through 10 were transported to Accomack County North Landfill for disposal as nonhazardous waste. The total tonnage of demolished concrete disposed as nonhazardous waste is estimated at approximately 27.5 tons. The disposal documentation is included in Appendix E.

Mercury Seal/Recovered Elemental Mercury, Spent HEPA Vacuum Filters, PPE, and Miscellaneous Waste

The mercury seal was removed intact and placed in a USDOT-approved, lined 85-gallon drum. Recovered elemental mercury was placed in sealed containers and containerized in the 85-gallon drum along with the mercury seal, spent HEPA vacuum filters, and the detached lock valve. Due to the size and suspect integrity of the mercury seal, it could not be determined how much mercury remained inside the seal. PPE and miscellaneous waste (other than the trickling filter tank materials) were containerized in three 55-gallon drums. Recovered elemental mercury through vacuuming totaled approximately 7 to 8 pounds. Some elemental mercury was observed to be mixed in the with filter sludges, however, this could not be quantified. The sludge, including approximately 5 pounds of spent MercSorb®, was containerized with stone in 55-gallon drum Nos. 6-8. On July 17, 2006, the 85-gallon drum containing the recovered elemental mercury, mercury seal, spent HEPA vacuum filters, and the detached lock valve, the three 55-gallon drums containing the PPE and miscellaneous waste, and 55-gallon drum Nos. 6-8 were transported to Envirite of PA as hazardous waste. The contents of the 85-gallon drum (467 pounds) and 55-gallon drum Nos. 6-8 (1,916 pounds) were recycled/disposed, while the three 55-gallon drums containing the PPE and miscellaneous waste (269 pounds) were disposed in a hazardous waste landfill. The waste manifests and Certificate of Disposal documentation are included in Appendix E.

Sediment from Wet Well and Main Plant Outfall, and Water from Pump House

Between May 17 and 18, 2006, one grab sediment sample (WFF1-TCRA-SD-01) was collected from the trickling filter's southern wet well and one grab sediment sample (WFF1-TCRA-SD-02) was collected from the confluence of the two intermittent streams located north of the Old WWTP buildings. The samples were collected to determine waste type (hazardous vs. non-hazardous) and other potential analyses needed for disposal/recycling facility approval. In addition, the sample collected from the intermittent stream was collected to determine whether contaminants had been transported to the nearby wetlands and potentially to Little Mosquito Creek (via surface water and/or sediment).

On May 18, 2006, an aqueous sample (WFF1-TCRA-TCLP-SW-01) was collected from the standing water located inside the cistern of the pump house building, in order to determine whether the standing water was hazardous and would require containerization for off-site disposal. Although readings above background levels were not recorded on the portable mercury vapor analyzer in the vicinity of the pump house, the aqueous sample was collected to ensure that contaminants had not migrated to the pump house.

A summary of the sampling and analytical program is presented on Table 3-2. Sediment samples WFF1-TCRA-SD-01 and WFF1-TCRA-SD-02 were analyzed for TAL metals. Aqueous sample WFF1-TCRA-TCLP-SW-01 was analyzed for full TCLP analyses, including VOCs, SVOCs, pesticides, herbicides, and metals, and corrosivity (pH), flash point, paint filter, reactive cyanide and reactive sulfide.

For comparison purposes only, TAL metals (except mercury) results of sediment samples were compared to USEPA Region 9 Preliminary Remediation Goals (PRGs) for Residential Soils (Note: USEPA Region III has not established generic remedial goals for metals). Please refer to Section 4.0 – Results of Confirmatory Soil Samples for a discussion on the use of PRGs and the mercury remedial goal. TCLP analytical results of the aqueous sample were compared to MCCs, as listed in Table 1 of 40 CFR, Subpart C, Part 261.24.

A summary of the sediment and aqueous sample analytical results is presented in Table 3-4 and the laboratory analytical reports are included in Appendix D. Five TAL metals, including antimony, arsenic, iron, lead, and mercury, were detected in sediment sample WFF1-TCRA-SD-01 at concentrations above their respective USEPA Region 9 PRGs. Sediment within the trickling filter tank and wet well was placed into 55-gallon drum Nos. 6-8. On July 17, 2006, these drums were transported to Envirite of PA for disposal/recycling. The waste manifests and disposal documentation are included in Appendix E.

One TAL metal (arsenic) was detected in sediment sample WFF1-TCRA-SD-02 at a concentration above its respective USEPA Region 9 PRGs. However, available information indicates that the arsenic concentration is the result of natural conditions at WFF and not as a result of a release from the Old WWTP Site. Please refer to Section 4.0 - Results of Confirmatory Soil Samples for a discussion of arsenic levels in on-site soils.

TCLP VOCs, SVOCs, pesticides, herbicides or metals, and reactive cyanide or sulfide were not detected in the aqueous sample collected from the standing water inside the pump house. In addition, results of the corrosivity (pH), flash point, and paint filter tests on the aqueous sample revealed the standing water inside the pump house was not hazardous waste.

3.6 Site Restoration

Site restoration included activities needed to return the site to pre-mobilization conditions. Following completion of the TCRA, the bottom of the trickling filter tank area was backfilled to ground surface with clean, off-site borrow material from C. Lee Davis, Inc. On May 9, 2006, a sample was collected from the backfill material (WFF-TCRA-BKG) and analyzed for TAL list metals, target compound list (TCL) VOCs and SVOCs, and total petroleum hydrocarbons (TPHs). Analytical results of the backfill sample are discussed in Section 4.0 and summarized in Table 4-1.

The site was backfilled and brought to grade with certified and sampled non-impacted fill free of debris. A geotextile liner fabric was placed in the excavation prior to backfilling to delineate

virgin soil from clean fill. A 6-inch layer of top soil was placed and compacted on top of the backfill soil and on re-graded soil in the disturbed areas at the site. Following the placement of the topsoil, seed, straw mulch, and nutrients were applied to disturbed areas in accordance with requirements of VDCR's *Virginia Erosion and Sedimentation Control Handbook* (VDCR, 1992) and the project specifications (WESTON, 2006). The entrance, access road, and cleared area were left to remain in order to facilitate additional investigations (e.g., completion of the SI) at the site.

3.7 Work Plan Deviations

TCRA activities were completed in general accordance with the Work Plan (WESTON, 2006). Necessary deviations from the Work Plan are summarized below:

- A portable mercury vapor analyzer (Lumex® Model RA-915) was used to screen the trickling filter stone media prior to placement into each roll-off. The Work Plan did not specify an action level for the screening process. Consequently, an action level of 1,000 nanograms per cubic meter (ng/m^3) was determined in the field. This action level was based on current toxicological information, Agency for Toxic Substances and Disease Registry (ATSDR) recommendations, and on the technical practicalities involved in cleanup of elemental (metallic) mercury releases and inorganic mercury in soils. The action level coincides with the residential cleanup level in air of 1,000 ng/m^3 and is based on the ATSDR document titled *Suggested Action Levels for Indoor Mercury Vapors in Homes or Businesses with Indoor Gas Regulators* (ATSDR, 2000).

    - On May 10, 2006, some of the trickling filter stone media located within Zone 2 and approximately 5 ft from the immediate area of the mercury release that was screened with the portable mercury vapor analyzer revealed readings above the action level. This stone was not immediately placed in a roll-off container or drum. Instead, the stone was placed back in Zone 2 of the trickling filter in an attempt to allow the entrained mercury vapors to disburse prior to re-screening. Supplemental screening of the stone revealed continued readings above the action level. This stone was placed in roll-off container No. 7 only.
    - On May 12, 2006, a similar situation occurred with the stone filter media located in Zone 1 of the trickling filter. This stone was not immediately placed in a roll-off or drum. Instead, the stone was mixed by the backhoe and spread out in trickling filter Zone 2 in an attempt to allow the entrained mercury vapors to disburse prior to re-screening. Supplemental screening of the stone revealed continued readings above the action level. This stone was placed in roll-off container No. 7 only.

- Sediment sample WFF1-TCRA-SD-02 was collected from the confluence of the two intermittent streams located north of the Old WWTP buildings. In the Work Plan, this sample was proposed to be collected from the main plant outfall. Although WESTON and USACE personnel conducted a search for the main plant outfall, it could not be located. Also, after a review of the piping layout, it was reasoned that a more likely location for potential impact would be the overflow line that would have remained open while the mercury was released after the plant shut down. The outfall of this line could not be located for certain, but was field measured based on the available site plans. Based on site observations, such as topography, the sediment sample was collected from the confluence of the two intermittent streams, as this location was assumed to be downgradient of the overflow line outfall.

- The locations of the pipe ends leading into and out of the trickling filter were not recorded using a global positioning system unit, as indicated in the Work Plan. It is noted that the remaining pipe at both ends is relatively short, and easily located based on remaining site structures.

4.0 RESULTS OF CONFIRMATORY SOIL SAMPLING

Five grab soil samples (WFF1-TCRA-SS-01; WFF1-TCRA-SS-02/WFF1-TCRA-SS-02-D; WFF1-TCRA-SS-04; and WFF1-TCRA-TCLP-SS-03), including one duplicate, were collected from beneath the trickling filter's concrete floor, trench/underdrain system, and southern wet well (Figure 3-1). The TAL metals analytical results of the soil samples were used to confirm that soils beneath the trickling filter tank did not contain contaminant concentrations in excess of the established action levels. The TCLP analytical results of the soil samples were used to determine waste type (hazardous vs. nonhazardous) and other analyses potentially needed for disposal/recycling facility approval.

TCLP analytical results of confirmatory soil samples were compared to the MCCs, as listed in Table 1 of 40 CFR, Subpart C, Part 261.24. TAL metals (except mercury) analytical results of confirmatory soil samples were compared to USEPA Region 9 PRGs for Residential Soils. USEPA Region III has not established a generic remedial goal for Mercury; therefore USEPA Region 9 PRGs are generic risk-based concentrations used as guidelines when assessing contaminated sites (USEPA, 2004). For total mercury soil analytical results, a remedial goal of 20 mg/kg was used instead of the applicable USEPA Region 9 PRG of 23 mg/kg. This remedial goal was in accordance with the site-specific risk-based concentration established for the soil clean-up goal in the model project, as outlined in the Work Plan (WESTON, 2006). According to the model project, the remedial goal is based on the Kansas Department of Health and Environment document titled *Mercury Contamination Remediation at Gas Pipeline Sites - SOW - October 1999* that reported this action level for residential soil deeper than 12 inches below ground surface. The action level was also based on the EPA risk-based PRG calculation for a future child resident (Baker, 2003; Baker, 2004).

A summary of the confirmatory soil sample analytical results is presented in Table 4-1 and the laboratory analytical reports are included in Appendix D. Concentrations of total mercury in the confirmatory soil samples ranged from 0.033 mg/kg to 1.3 mg/kg. The mercury concentrations did not meet or exceed the established mercury action level of 20 mg/kg. Except for arsenic,

other TAL metals were detected at concentrations below their respective USEPA Region 9 PRGs. Arsenic concentrations in the confirmatory soil samples ranged from 1.7 mg/kg to 2.6 mg/kg. Arsenic was detected in each confirmatory soil sample at a concentration exceeding the USEPA Region 9 PRG of 0.39 mg/kg. However, available information indicates that the arsenic concentrations are the result of natural conditions at WFF. This conclusion is based on Tetra Tech NUS, Inc.'s May 2004 *Background Soil and Groundwater Investigation Report for the Main Base, NASA Wallops Flight Facility, Wallops Island, Virginia.* According to this report, the Molena series soils that underlie the Old WWTP Site contain arsenic at concentrations ranging from 0.78 mg/kg to 14.2 mg/kg (Molena surface soils) and from 1.1 mg/kg to 5.3 mg/kg (Molena subsurface soils) (Tetra Tech NUS, 2004).

TCLP metals, SVOCs, pesticides or herbicides, or reactive cyanide or reactive sulfide were not detected in confirmatory soil sample WFF1-TCRA-TCLP-SS-03. One TCLP VOC (tetrachloroethylene [PCE]) was detected at 100 micrograms per liter (ug/L) in sample WFF1-TCRA-TCLP-SS-03. However, this concentration does not exceed PCE's respective TCLP MCC of 700 ug/L.

A summary of the analytical results for the backfill material sample (WFF-TCRA-BKG) is presented in Table 4-1, and the laboratory analytical reports are included in Appendix D. TCL VOCs or SVOCs were not detected in the sample, and TAL metals were not detected at concentrations above their respective USEPA Region 9 PRGs. In addition, TPH Gasoline Range Organic (GSO) compounds were not detected, but TPH Diesel Range Organic (DRO) compounds were detected in the sample at 6.6 mg/kg. However, this value does not exceed the Virginia Department of Environmental Quality's (VDEQ) maximum TPH concentration (50 mg/kg) required for non-impacted clean fill (VDEQ, 2001).

5.0 REFERENCES

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TABLES

Table 3-1

Timeline of Major Events for Time Critical Removal Action
Old Wastewater Treatment Plant Site
Wallops Flight Facility, Accomack County, Virginia

Date	Event
May 8, 2006	Conducted site preparation activities, which included mobilizing equipment, material, and personnel. Installed silt fence and initiated construction of gravel access road, equipment lay-down areas, and vehicle and equipment shakedown (decontamination) pad.
May 9, 2006	Completed construction of gravel access road. Delineated work zones, including the exclusion zone and contamination-reduction zone, which included a decontamination area for personnel. Disassembled the trickling filter's rotary distributor mechanism and removed sediment/soil from distribution arms. Collected a soil sample from potential back-fill material and shipped to laboratory for analysis.
May 10, 2006	Began to remove trickling filter stone media from Zone 2. Two roll-off containers (Nos. 1 and 2) were delivered to the site and each filled with approximately 15 tons of stone filter media from trickling filter Zone 2.
May 11, 2006	Continued to remove trickling filter stone media from Zone 2. Three roll-off containers (Nos. 3, 4, and 5) were delivered to the site and each filled with approximately 15 tons of stone filter media from trickling filter Zone 2. The total amount of stone filter material removed for the day was approximately 45 tons. The total removed to-date was approximately 75 tons.
May 12, 2006	Completed removal of trickling filter stone media from Zone 2. Began to remove trickling filter stone media from Zone 1. Three roll-off containers (Nos. 6, 7, and 8) were delivered to the site. Roll-off container No. 6 was filled with approximately 15 tons of stone filter media from trickling filter Zone 2. The total amount of stone filter material removed for the day was approximately 20 tons. The total removed to-date was approximately 95 tons.
May 15, 2006	Continued removal of trickling filter stone media from Zone 1. The remaining exposed stone filter media from trickling filter Zone 2 was placed in roll-off container No. 7, the total volume of which was estimated at 20 tons. Approximately 1.5 55-gallon drums were filled with stone and sludge from trickling filter Zone 1. The observed elemental mercury was vacuumed and containerized before placement in an 85-gallon drum.
May 16, 2006	The remaining stone filter media from trickling filter Zone 1 was hand sorted and placed in roll-off container No. 7 or in 55-gallon drums. The stone and sediment/sludge within the trickling filter trench was placed in 55-gallon drums. Visible mercury was vacuumed and containerized in sealed jars. Concrete grates covering the trickling filter trench were cleaned prior to placement in roll-off container No. 8. The total volume in roll-off container No. 7 is estimated at 20-25 tons. Approximately 3.5 55-gallon drums were filled with stone and sludge from trickling filter Zone 1. Total elemental mercury containerized is estimated at 5 to 7 pounds.
May 17, 2006	Completed cleaning of interior surface areas of the trickling filter tank. Collected a sediment sample from the trickling filter's southern wet well; the remaining sediment material in the wet well was then removed. Concrete chip samples of the trickling filter were collected from 6 locations. Collected composite samples of trickling filter stone media that had been placed in roll-off containers. The pedestal arm of the trickling filter was detached from the pier; the pier was then demolished. Began demolition of the concrete trickling filter tank.
May 18, 2006	Continued demolition of the concrete trickling filter tank. Collected four confirmatory soil samples from beneath the tickling filter tank. Collected an aqueous (water) sample from inside the Pump House, and collected a sediment sample from a nearby intermittent stream/stormwater drainage ditch.
May 19, 2006	Completed demolition of concrete trickling filter tank. Collected a soil sample from beneath the trickling filter's southern wet well. The floor opening in the pump house was covered with plywood, and fencing was placed over the door frame to prevent access to the Pump House. The trickling filter tank excavation was covered with filter fabric and polyethylene sheeting. Collected a composite sample from 55-gallon drum Nos. 1 through 5 containing trickling filter stone media. The final estimate of liquid elemental mercury collected is 7 pounds. Estimated concrete removed is 25 tons. Estimate of total trickling filter stone media removed and placed in roll-off containers is 120 tons. The trickling filter's pedestal arm, containerized liquid mercury, and polyethylene sheeting used during removal of the pedestal arm were placed in an 85-gallon drum.
May 30 through June 1, 2006	Trickling filter stone media from 55-gallon drums Nos. 1 through 5 was placed in roll-off container No. 2, as analytical results from samples collected on May 19, 2006 showed non-hazardous characteristics. Transported roll-off container Nos. 1 through 10 to Accomack County North Landfill, located in Atlantic, Virginia. Completed site restoration activities.
June 9, 2006	Collected a second composite sample from 55-gallon drum Nos. 6 through 8 containing trickling filter stone media, as original sample collected was unusable.
July 17, 2006	Transported mercury-contaminated hazardous waste (3 55-gallon drums containing trickling filter stone material [drum Nos. 6-8]; one 85-gallon drum containing elemental mercury from vacuuming, the rotary distributor's mercury seal chamber, the pedestal arm, and the valve; and 2 55-gallon drums containing PPE) to Envirite of Pennsylvania (PA), located in York, PA.

PPE = personal protective equipment

Zone 1 = the area inside a 5-foot radius around the pedestal.

Zone 2 = the area between Zone 1 and the trickling filter tank wall.

Table 3-2

Summary of Sampling and Analytical Program for
Time Critical Removal Action
Old Wastewater Treatment Plant Site
Wallops Flight Facility, Accomack County, Virginia

SAMPLE ID	LOCATION DESCRIPTION	MATRIX	DATE COLLECTED	ANALYSES
WFF-TCRA-BKG	Backfill material	Sand	5/9/2006	TAL Metals, TPH, and TCL VOCs and SVOCs
WFF1-TCRA-SD-01	Southern trickling filter wet well	Sediment	5/17/2006	TAL Metals
WFF1-TCRA-TCLP-F1	Base/floor of trickling filter tank, approximately 8 feet north-northwest of pedestal	Concrete	5/17/2006	TCLP Metals
WFF1-TCRA-TCLP-F2	Base/floor of trickling filter tank, approximately 8 feet north-northeast of pedestal	Concrete	5/17/2006	TCLP Metals
WFF1-TCRA-TCLP-W1	Midpoint of trickling filter tank wall, approximately 1-foot east of northern trickling filter wet well	Concrete	5/17/2006	TCLP Metals
WFF1-TCRA-TCLP-PED	Southern vertical face of pedestal	Concrete	5/17/2006	TCLP Metals
WFF1-TCRA-TCLP-T1	Western vertical face of southern trench/underdrain system, capturing both pours	Concrete	5/17/2006	TCLP Metals
WFF1-TCRA-TCLP-WW1	Base of southern trickling filter wet well	Concrete	5/17/2006	TCLP Metals
WFF1-TCRA-TCLP-R1-6	Composite of roll-off containers Nos. 1 through 6	Stone	5/17/2006	TCLP Metals
WFF1-TCRA-TCLP-R7	Roll-off container No. 7	Stone	5/17/2006	TCLP Metals
WFF1-TCRA-TCLP-SW-01	Pump House, just inside door, on right	Aqueous	5/18/2006	Full TCLP Analyses, Corrosivity (pH), FP, Paint Filter, Reactive Cyanide, and Reactive Sulfide
WFF1-TCRA-SD-02	Confluence of two dry intermittent stream beds, located north of trickling filter tank.	Sediment	5/18/2006	TAL Metals
WFF1-TCRA-SS-01	Beneath trickling filter trench/underdrain system, approximately 3 feet north of pedestal	Soil	5/18/2006	TAL Metals
WFF1-TCRA-SS-02	Beneath base of trickling filter tank, approximately 7 feet northeast of pedestal	Soil	5/18/2006	TAL Metals
WFF1-TCRA-SS-02-D	Duplicate sample of WFF1-TCRA-SS-02	Soil	5/18/2006	TAL Metals
WFF1-TCRA-SS-04	Beneath base of trickling filter tank, approximately 9 feet west-southwest of pedestal	Soil	5/18/2006	TAL Metals
WFF1-TCRA-TCLP-SS-03	Beneath base of southern trickling filter wet well	Soil	5/19/2006	Full TCLP Analyses, Reactive Cyanide, and Reactive Sulfide
WFF1-TCRA-TCLP-DR1-5	Composite of 55-gallon drum Nos. 1 though 5	Stone	5/19/2006	TCLP Metals
WFF1-TCRA-TCLP-DR6-8	Composite of 55-gallon drum Nos. 6 though 8	Stone	6/9/2006	TCLP Mercury and Total Mercury

FP = Flash Point
Full TCLP Analyses = volatile organic compounds, semivolatile organic compounds, pesticides, herbicides, and metals
SVOC = Semivolatile Organic Compound
TAL = Target Analyte List
TCL = Target Compound List
TCLP = Toxicity Characteric Leaching Procedure
TPH = Total Petroleum Hydrocarbon
VOC = Volatile Organic Compound

Table 3-3

Laboratory Analytical Results for Trickling Filter Stone and Concrete Samples
Old Wastewater Treatment Plant Site Time Critical Removal Action
Wallops Flight Facility, Accomack County, Virginia

		Concrete										Stone									
ANALYTE	**TCLP MCC**	**WFF1-TCRA-TCLP-F1**		**WFF1-TCRA-TCLP-F2**		**WFF1-TCRA-TCLP-W1**		**WFF1-TCRA-TCLP-PED**		**WFF1-TCRA-TCLP-T1**		**WFF1-TCRA-TCLP-WW1**		**WFF1-TCRA-TCLP-R1-6**		**WFF1-TCRA-TCLP-R7**		**WFF1-TCRA-TCLP-DR1-5**		**WFF1-TCRA-TCLP-DR6-8**
TCLP Metals (ug/L)																					
Arsenic	5,000	200	U	200	U	200	U	200	U	200	U	200	U	200	U	200	U	200	U	--	
Barium	100,000	1,000	U	1,000	U	1,000	U	1,000	U	1,000	U	1,000	U	1,000	U	1,000	U	1,000	U	--	
Cadmium	1,000	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	60	U	--	
Chromium	5,000	50	U	50	U	50	U	50	U	50	U	50	U	50	U	50	U	50	U	--	
Lead	5,000	100	U	100	U	100	U	100	U	100	U	100	U	208		1,230		--			
Mercury	200	2	U	2	U	2	U	2	U	2	U	2	U	2	U	2	U	21.3		45.7	
Selenium	1,000	200	U	200	U	200	U	200	U	200	U	200	U	200	U	200	U	200	U	--	
Silver	5,000	50	U	50	U	50	U	50	U	50	U	50	U	50	U	50	U	50	U	--	
Total Hg (mg/kg)	**Hg Remedial Goal^**																				
Mercury	20	--		--		--		--		--		--		--		--		--		2,120 D	

Notes:

When a sample concentration exceeds a remedial goal/benchmark, the concentration is highlighted with that remedial goal's/benchmark's color.

Hg = mercury

mg/kg = milligram per kilogram (equivalent to parts per million [ppm])

TCLP = Toxicity Characteristic Leaching Procedure

TCLP MCC = Toxicity Characteristic Leaching Procedure, Maximum Concentration of Contaminant, as listed in Table 1 of 40 CFR, Part 261.24.

µg/L = micrograms per liter (equivalent to parts per billion [ppb])

-- = indicates the compound/metal was not analyzed

^ = total mercury analytical results were compared to a remedial goal of 20 mg/kg, in accordance with the site-specific risk-based concentration established for the soil clean-up goal in the model project.

Data qualifiers:

D = Indicates that the analyte was reported from a diluted analysis.

U = indicates the substance was analyzed for, but not detected. The associated numerical value is the reporting limit.

Table 3-4

Laboratory Analytical Results for Sediment and Water Samples
Old Wastewater Treatment Plant Site Time Critical Removal Action
Wallops Flight Facility, Accomack County, Virginia

ANALYTE	WFFI-TCRA-SD-01		WFFI-TCRA-SD-02		WFFI-TCRA-TCLP-SW-01		EPA PRGs/Hg Remedial Goal^	TCLP MCC
TAL Metals (mg/kg)								
Aluminum	2,750	D	3,730		--		NA	NA*
Antimony	75.5	ND	0.71	JN	--		31	NA*
Arsenic	12.7		2.7		--		0.39	NA*
Barium	569	D	14.1		--		5,400	NA*
Beryllium	0.17	J	0.16	J	--		150	NA*
Cadmium	1.9	JD	0.57	U	--		37	NA*
Calcium	5,380	*	191	*	--		NA	NA*
Chromium	56.4	D	4.6		--		210	NA*
Cobalt	5.5	D	0.80		--		900	NA*
Copper	68.9	D	1.3		--		3,100	NA*
Iron	77,900	D	3,200		--		23,000	NA*
Lead	2,350	D	5.5		--		400	NA*
Magnesium	993	N*D	277	N*	--		NA	NA*
Manganese	447	ND	45.6	N	--		1,800	NA*
Mercury	147	ND	0.019	JN	--		20^	NA*
Nickel	17.4		2.1		--		1,600	NA*
Potassium	779	N	154	N	--		NA	NA*
Selenium	2.6	JD	1.9	U	--		390	NA*
Silver	8.2		0.47	U	--		390	NA*
Sodium	142	JD	83.8	J	--		NA	NA*
Thallium	16.6	UD	2.8	U	--		5.2	NA*
Vanadium	30.6	D	6.8		--		78	NA*
Zinc	1,220	ND	10.6	N	--		2,300	NA*
TCLP Metals (ug/L)								
Arsenic	--		--		200	U	NA*	5,000
Barium	--		--		1000	U	NA*	100,000
Cadmium	--		--		60	U	NA*	1,000
Chromium	--		--		50	U	NA*	5,000
Lead	--		--		100	U	NA*	5,000
Mercury	--		--		2	U	NA*	200
Selenium	--		--		200	U	NA*	1,000
Silver	--		--		50	U	NA*	5,000
TCLP SVOCs (ug/L)								
Pyridine	--		--		50	U	NA*	5,000
1,4-Dichlorobenzene	--		--		50	U	NA*	7,500
2-Methylphenol	--		--		50	U	NA*	200,000
3&4-Methylphenol	--		--		50	U	NA*	200,000
Hexachloroethane	--		--		50	U	NA*	3,000
Nitrobenzene	--		--		50	U	NA*	2,000
Hexachlorobutadiene	--		--		50	U	NA*	500
2,4,5-Trichlorophenol	--		--		50	U	NA*	400,000
2,4,6-Trichlorophenol	--		--		50	U	NA*	2,000
2,4-Dinitrotoluene	--		--		50	U	NA*	130
Hexachloroethane	--		--		50	U	NA*	130
Pentachlorophenol	--		--		100	U	NA*	100,000
TCLP VOCs (ug/L)								
Vinyl chloride	--		--		100	U	NA*	200
1,1-Dichloroethene	--		--		100	U	NA*	700
2-Butanone (MEK)	--		--		100	U	NA*	200,000
Chloroform	--		--		100	U	NA*	6,000
Carbon tetrachloride	--		--		100	U	NA*	500
Benzene	--		--		100	U	NA*	500
1,4-Dichlorobenzene	--		--		100	U	NA*	7,500
1,2-Dichloroethane	--		--		100	U	NA*	500
Trichloroethene	--		--		100	U	NA*	500
Tetrachloroethene	--		--		100	U	NA*	700
Chlorobenzene	--		--		100	U	NA*	100,000

Table 3-4

Laboratory Analytical Results for Sediment and Water Samples
Old Wastewater Treatment Plant Site Time Critical Removal Action
Wallops Flight Facility, Accomack County, Virginia

ANALYTE	WFFI-TCRA-SD-01	WFFI-TCRA-SD-02	WFFI-TCRA-TCLP-SW-01	EPA PRGs/Hg Remedial Goal^	TCLP MCC
TCLP Pesticides (ug/L)					
gamma-BHC (Lindane)	--	--	0.25 U	NA*	400
Endrin	--	--	0.25 U	NA*	20
Heptachlor	--	--	0.25 U	NA*	8
Heptachlor epoxide	--	--	0.25 U	NA*	8
Methoxychlor	--	--	0.25 U	NA*	10,000
Toxaphene	--	--	5.0 U	NA*	500
Chlordane	--	--	5.0 U	NA*	30
TCLP Herbicides (ug/L)					
2,4-D	--	--	5.0 U	NA*	10,000
Silvex	--	--	5.0 U	NA*	1,000
Other					
Reactive Cyanide (mg/L)	--	--	0.030 U	NA*	500
Reactive Sulfide (mg/L)	--	--	10 U	NA*	11,000
Flash Point (degrees Celsius)	--	--	100 U	NA*	<60
Corrosivity as pH	--	--	5.8	NA*	< 2 or > 12.5
% Free Liquid	--	--	100	NA*	NA*

Notes:

When a sample concentration exceeds a remedial goal/benchmark, the concentration is highlighted with that remedial goal's/benchmark's color.

EPA PRGs = U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals for Residential Soil.

mg/kg = milligrams per kilogram (equivalent to parts per million [ppm])

mg/L = milligrams per liter (equivalent to parts per million [ppm])

NA = not available.

NA* = not applicable. TCLP MCCs are compared to TCLP analytical results only. EPA PRGs are compared to TCL organics and TAL metals only.

SVOC = semivolatile organic compound

TAL = target analyte list

TCLP = Toxicity Characteristic Leaching Procedure

TCLP MCC = Toxicity Characteristic Leaching Procedure, Maximum Concentration of Contaminant, as listed in Table 1 of 40 CFR, Part 261.24 - Toxicity Characteristic.

TPH = Total Petroleum Hydrocarbon (DRO = diesel range organics; GRO = gasoline range organics)

µg/kg = micrograms per kilogram (equivalent to parts per billion [ppb])

µg/L = micrograms per liter (equivalent to parts per billion [ppb])

VOC = volatile organic compound

-- = indicates the compound/metal was not analyzed

^ = total mercury analytical results were compared to a remedial goal of 20 mg/kg, in accordance with the site-specific risk-based concentration established for the soil clean-up goal in the model project.

Data qualifiers:

D = indicates the analyte was reported from a diluted analysis.

J = indicates the substance was detected at an estimated concentration less than the reporting limit.

N = indicates that the spike sample recovery not within control limits.

U = indicates the substance was analyzed for, but not detected. The associated numerical value is the reporting limit.

* = indicates the duplicate analysis was not within control limits.

Table 4-1

Laboratory Analytical Results for Confirmatory Soil Samples
Old Wastewater Treatment Plant Site Time Critical Removal Action
Wallops Flight Facility, Accomack County, Virginia

ANALYTE	WFF-TCRA-BKG		WFFI-TCRA-SS-01		WFFI-TCRA-SS-02		WFFI-TCRA-SS-02-D		WFFI-TCRA-TCLP-SS-03		WFFI-TCRA-SS-04		EPA PRGs/Hg Remedial Goal^	TCLP MCC
TAL Metals (mg/kg)														
Aluminum	2,010		5,490		2,710		2,930		--		3,520		NA	NA*
Antimony	1.6	UN	0.49	JN	0.62	JN	0.45	JN	--		0.59	JN	31	NA*
Arsenic	1.6	U	2.4		2.6		1.7		--		2.5		0.39	NA*
Barium	3.5		18.5		8.1		8.6		--		8.9		5,400	NA*
Beryllium	0.047	J	0.20	E	0.11		0.11	JE	--		0.14	JE	150	NA*
Cadmium	0.030	J	0.54	U	0.52	U	0.48	U	--		0.51	U	37	NA*
Calcium	89.0		14,600		250		468		--		775		NA	NA*
Chromium	2.5	N	5.8		2.3		2.7		--		3.5		210	NA*
Cobalt	0.30	J	1.1		0.33	J	0.49		--		0.55		900	NA*
Copper	0.42	J	5.0		0.28	J	0.33	J	--		0.54	J	3,100	NA*
Iron	921		3,800		1,610		1,670		--		1,880		23,000	NA*
Lead	0.80		5.4		1.3		1.2		--		1.9		400	NA*
Magnesium	154		950	NE	107	NE	144	NE	--		172	NE	NA	NA*
Manganese	6.4		52.5	*	7.3	*	28.2	*	--		18.9	*	1,800	NA*
Mercury	0.031	U	1.3		0.033		0.053		--		0.14		20^	NA*
Nickel	1.3		2.7		0.72	J	0.88		--		0.99		1,600	NA*
Potassium	112		191	NE	94.5	NE	118	NE	--		127	NE	NA	NA*
Selenium	1.6	U	0.30	J	1.7	U	1.6	U	--		0.20	J	390	NA*
Silver	0.39	U	0.45	U	0.43	U	0.4	U	--		0.42	U	390	NA*
Sodium	54.3	J	78.7	J	85.3	J	72.7	J	--		85.1	J	NA	NA*
Thallium	2.4	U	2.7	U	2.6	U	2.4	U	--		2.5	U	5.2	NA*
Vanadium	2.0		7.2	N	3.6	N	4.0	N	--		4.5	N	78	NA*
Zinc	4.1		10.6		2.6		2.8		--		3.5		2,300	NA*
TCLP Metals (ug/L)														
Arsenic	--		--		--		--		200	U	--		NA*	5,000
Barium	--		--		--		--		1,000	U	--		NA*	100,000
Cadmium	--		--		--		--		60	U	--		NA*	1,000
Chromium	--		--		--		--		50	U	--		NA*	5,000
Lead	--		--		--		--		100	U	--		NA*	5,000
Mercury	--		--		--		--		2	U	--		NA*	200
Selenium	--		--		--		--		200	U	--		NA*	1,000
Silver	--		--		--		--		50	U	--		NA*	5,000
TPH (mg/kg)														
TPH-DRO	6.6		--		--		--		--		--		NA*	NA*
TPH-GRO	0.110	U	--		--		--		--		--		NA*	NA*
TCL SVOCs (ug/kg)														
1,1- Biphenyl	350	U	--		--		--		--		--		3.0E+03	NA*
2,2-Oxybis(1-Chloropropane)	350	U	--		--		--		--		--		NA	NA*
2,4,5-Trichlorophenol	350	U	--		--		--		--		--		6.1E+03	NA*
2,4,6-Trichlorophenol	350	U	--		--		--		--		--		6.1E+00	NA*
2,4-Dichlorophenol	350	U	--		--		--		--		--		1.8E+02	NA*
2,4-Dimethylphenol	350	U	--		--		--		--		--		1.2E+03	NA*
2,4-Dinitrophenol	710	U	--		--		--		--		--		1.2E+02	NA*
2,4-Dinitrotoluene	350	U	--		--		--		--		--		1.2E+02	NA*
2,6-Dinitrotoluene	350	U	--		--		--		--		--		6.1E+01	NA*
2-Chloronaphthalene	350	U	--		--		--		--		--		NA	NA*
2-Chlorophenol	350	U	--		--		--		--		--		6.3E+01	NA*
2-Methylnaphthalene	350	U	--		--		--		--		--		NA	NA*
2-Nitroaniline	350	U	--		--		--		--		--		1.8E+02	NA*
2-Nitrophenol	350	U	--		--		--		--		--		NA	NA*
2-methylphenol	350	U	--		--		--		--		--		3.1E+03	NA*
3,3-Dichlorobenzidine	710	U	--		--		--		--		--		1.1E+00	NA*
3-Nitroaniline	350	U	--		--		--		--		--		1.8E+01	NA*
4,6-dinitro-2-methyl phenol	710	U	--		--		--		--		--		NA	NA*

Table 4-1

Laboratory Analytical Results for Confirmatory Soil Samples
Old Wastewater Treatment Plant Site Time Critical Removal Action
Wallops Flight Facility, Accomack County, Virginia

ANALYTE	WFF-TCRA-BKG	WFFI-TCRA-SS-01	WFFI-TCRA-SS-02	WFFI-TCRA-SS-02-D	WFFI-TCRA-TCLP-SS-03	WFFI-TCRA-SS-04	EPA PRGs/Hg Remedial Goal^	TCLP MCC
TCL SVOCs (ug/kg) (concluded)								
4-Bromophenyl-phenylether	350 U	--	--	--	--	--	NA	NA*
4-Chloroaniline	350 U	--	--	--	--	--	2.4E+05	NA*
4-Chlorophenyl Phenyl Ether	350 U	--	--	--	--	--	NA	NA*
4-Nitroaniline	350 U	--	--	--	--	--	2.3E+01	NA*
4-Nitrophenol	710 U	--	--	--	--	--	NA	NA*
4-chloro-3-methylphenol	350 U	--	--	--	--	--	NA	NA*
4-methylphenol	350 U	--	--	--	--	--	3.1E+06	NA*
Acenaphthene	350 U	--	--	--	--	--	3.7E+06	NA*
Acenaphthylene	350 U	--	--	--	--	--	NA	NA*
Acetophenone	350 U	--	--	--	--	--	NA	NA*
Anthracene	350 U	--	--	--	--	--	2.2E+07	NA*
Atrazine	350 U	--	--	--	--	--	2.2E+03	NA*
Benzaldehyde	350 U	--	--	--	--	--	6.1E+06	NA*
Benzo(a)anthracene	350 U	--	--	--	--	--	6.2E+02	NA*
Benzo(a)pyrene	350 U	--	--	--	--	--	6.2E+01	NA*
Benzo(b)fluoranthene	350 U	--	--	--	--	--	6.2E+02	NA*
Benzo(g,h,i)perylene	350 U	--	--	--	--	--	NA	NA*
Benzo(k)fluoranthene	350 U	--	--	--	--	--	6.2E+03	NA*
Benzyl Butyl Phthalate	350 U	--	--	--	--	--	1.2E+07	NA*
Caprolactam	350 U	--	--	--	--	--	3.1E+07	NA*
Carbazole	350 U	--	--	--	--	--	2.4E+04	NA*
Chrysene	350 U	--	--	--	--	--	6.2E+04	NA*
Dibenz(a,h)Anthracene	350 U	--	--	--	--	--	6.2E+01	NA*
Dibenzofuran	350 U	--	--	--	--	--	1.5E+05	NA*
Diethyl Phthalate	350 U	--	--	--	--	--	4.9E+07	NA*
Dimethyl Phthalate	350 U	--	--	--	--	--	1.0E+08	NA*
Fluoranthene	350 U	--	--	--	--	--	2.3E+06	NA*
Fluorene	350 U	--	--	--	--	--	2.7E+06	NA*
Hexachlorobenzene	350 U	--	--	--	--	--	3.0E+02	NA*
Hexachlorobutadiene	350 U	--	--	--	--	--	6.2E+03	NA*
Hexachlorocyclopentadiene	350 U	--	--	--	--	--	3.7E+05	NA*
Hexachloroethane	350 U	--	--	--	--	--	3.5E+04	NA*
Indeno(1,2,3-c,d)Pyrene	350 U	--	--	--	--	--	6.2E+02	NA*
Isophorone	350 U	--	--	--	--	--	5.1E+05	NA*
Naphthalene	350 U	--	--	--	--	--	5.6E+04	NA*
Nitrobenzene	350 U	--	--	--	--	--	2.0E+04	NA*
Pentachlorophenol	710 U	--	--	--	--	--	3.0E+03	NA*
Phenanthrene	350 U	--	--	--	--	--	NA	NA*
Phenol	350 U	--	--	--	--	--	1.8E+07	NA*
Pyrene	350 U	--	--	--	--	--	2.3E+06	NA*
bis(2-chloroethoxyl) methane	350 U	--	--	--	--	--	NA	NA*
bis(2-chloroethyl) ether	350 U	--	--	--	--	--	2.2E+02	NA*
bis(2-ethylhexyl) phthalate	350 U	--	--	--	--	--	3.5E+04	NA*
di-n-Butyl Phthalate	350 U	--	--	--	--	--	NA	NA*
di-n-Octyl Phthalate	350 U	--	--	--	--	--	2.4E+06	NA*
n-Nitrosodi-n-Propylamine	350 U	--	--	--	--	--	NA	NA*
n-Nitrosodiphenylamine	350 U	--	--	--	--	--	NA	NA*
TCLP SVOCs (ug/L)								
Pyridine	--	--	--	--	50 U	--	NA*	5,000
1,4-Dichlorobenzene	--	--	--	--	50 U	--	NA*	7,500
2-Methylphenol	--	--	--	--	50 U	--	NA*	200,000
3&4-Methylphenol	--	--	--	--	50 U	--	NA*	200,000
Hexachloroethane	--	--	--	--	50 U	--	NA*	3,000
Nitrobenzene	--	--	--	--	50 U	--	NA*	2,000
Hexachlorobutadiene	--	--	--	--	50 U	--	NA*	500
2,4,5-Trichlorophenol	--	--	--	--	50 U	--	NA*	400,000
2,4,6-Trichlorophenol	--	--	--	--	50 U	--	NA*	2,000
2,4-Dinitrotoluene	--	--	--	--	50 U	--	NA*	130
Hexachloroethane	--	--	--	--	50 U	--	NA*	130
Pentachlorophenol	--	--	--	--	100 U	--	NA*	100,000

Table 4-1

Laboratory Analytical Results for Confirmatory Soil Samples
Old Wastewater Treatment Plant Site Time Critical Removal Action
Wallops Flight Facility, Accomack County, Virginia

ANALYTE	WFF-TCRA-BKG	WFFI-TCRA-SS-01	WFFI-TCRA-SS-02	WFFI-TCRA-SS-02-D	WFFI-TCRA-TCLP-SS-03	WFFI-TCRA-SS-04	EPA PRGs/Hg Remedial Goal^	TCLP MCC
TCL VOCs (ug/kg)								
1,1,1-Trichloroethane	5.3 U	--	--	--	--	--	1.2E+06	NA*
1,1,2,2-Tetrachloroethane	5.3 U	--	--	--	--	--	4.1E+02	NA*
1,1,2-Trichloroethane	5.3 U	--	--	--	--	--	7.3E+02	NA*
1,1-Dichloroethane	5.3 U	--	--	--	--	--	5.1E+05	NA*
1,1-Dichloroethene	5.3 U	--	--	--	--	--	1.2E+05	NA*
1,2,4-Trichlorobenzene	5.3 U	--	--	--	--	--	6.2E+04	NA*
1,2-Dibromo-3-Chloropropane	5.3 U	--	--	--	--	--	4.6E+02	NA*
1,2-Dichlorobenzene	5.3 U	--	--	--	--	--	6.0E+05	NA*
1,2-Dichloroethane	5.3 U	--	--	--	--	--	2.8E+02	NA*
1,2-Dichloropropane	5.3 U	--	--	--	--	--	3.4E+02	NA*
1,3-Dichlorobenzene	5.3 U	--	--	--	--	--	5.3E+05	NA*
1,4-Dichlorobenzene	5.3 U	--	--	--	--	--	3.4E+03	NA*
2-Butanone	11 U	--	--	--	--	--	2.2E+07	NA*
2-Hexanone	11 U	--	--	--	--	--	NA	NA*
4-Methyl-2-Pentanone	11 U	--	--	--	--	--	NA	NA*
Acetone	11 U	--	--	--	--	--	1.4E+07	NA*
Benzene	5.3 U	--	--	--	--	--	6.4E+02	NA*
Bromodichloromethane	5.3 U	--	--	--	--	--	8.2E+02	NA*
Bromoform	5.3 U	--	--	--	--	--	6.2E+03	NA*
Bromomethane	11 U	--	--	--	--	--	3.9E+03	NA*
Carbon Disulfide	5.3 U	--	--	--	--	--	3.6E+05	NA*
Carbon Tetrachloride	5.3 U	--	--	--	--	--	2.5E+02	NA*
Chlorobenzene	5.3 U	--	--	--	--	--	1.5E+05	NA*
Chloroethane	11 U	--	--	--	--	--	3.0E+03	NA*
Chloroform	5.3 U	--	--	--	--	--	2.2E+02	NA*
Chloromethane	11 U	--	--	--	--	--	4.7E+03	NA*
Cyclohexane	5.3 U	--	--	--	--	--	1.4E+05	NA*
Dibromochloromethane	5.3 U	--	--	--	--	--	1.1E+03	NA*
Dichlorodifluoromethane	5.3 U	--	--	--	--	--	9.4E+03	NA*
Ethylbenzene	5.3 U	--	--	--	--	--	4.0E+05	NA*
Ethylene Dibromide	5.3 U	--	--	--	--	--	3.2E+01	NA*
Freon 113	5.3 U	--	--	--	--	--	5.6E+06	NA*
Isopropylbenzene	5.3 U	--	--	--	--	--	5.7E+05	NA*
Methyl Acetate	5.3 U	--	--	--	--	--	2.2E+07	NA*
Methylcyclohexane	5.3 U	--	--	--	--	--	2.6E+06	NA*
Methylene Chloride	11 U	--	--	--	--	--	9.1E+03	NA*
Styrene	5.3 U	--	--	--	--	--	1.7E+06	NA*
Tetrachloroethylene	5.3 U	--	--	--	--	--	4.8E+02	NA*
Toluene	5.3 U	--	--	--	--	--	5.2E+05	NA*
Trichloroethene	5.3 U	--	--	--	--	--	5.3E+01	NA*
Trichlorofluoromethane	5.3 U	--	--	--	--	--	3.9E+05	NA*
Vinyl Chloride	11 U	--	--	--	--	--	7.9E+01	NA*
Xylenes, Total	5.3 U	--	--	--	--	--	2.7E+05	NA*
cis-1,2-Dichloroethene	5.3 U	--	--	--	--	--	4.3E+04	NA*
cis-1,3-Dichloropropene	5.3 U	--	--	--	--	--	NA	NA*
tert-butyl methyl ether	5.3 U	--	--	--	--	--	3.2E+04	NA*
trans-1,2-dichloroethene	5.3 U	--	--	--	--	--	6.9E+04	NA*
trans-1,3-dichloropropene	5.3 U	--	--	--	--	--	NA	NA*
TCLP VOCs (ug/L)								
Vinyl chloride	--	--	--	--	100 U	--	NA*	200
1,1-Dichloroethene	--	--	--	--	100 U	--	NA*	700
2-Butanone (MEK)	--	--	--	--	100 U	--	NA*	200,000
Chloroform	--	--	--	--	100 U	--	NA*	6,000
Carbon tetrachloride	--	--	--	--	100 U	--	NA*	500
Benzene	--	--	--	--	100 U	--	NA*	500
1,4-Dichlorobenzene	--	--	--	--	100 U	--	NA*	7,500
1,2-Dichloroethane	--	--	--	--	100 U	--	NA*	500
Trichloroethene	--	--	--	--	100 U	--	NA*	500
Tetrachloroethylene	--	--	--	--	100	--	NA*	700
Chlorobenzene	--	--	--	--	100 U	--	NA*	100,000

Table 4-1

Laboratory Analytical Results for Confirmatory Soil Samples
Old Wastewater Treatment Plant Site Time Critical Removal Action
Wallops Flight Facility, Accomack County, Virginia

ANALYTE	WFF-TCRA-BKG	WFFI-TCRA-SS-01	WFFI-TCRA-SS-02	WFFI-TCRA-SS-02-D	WFFI-TCRA-TCLP-SS-03	WFFI-TCRA-SS-04	EPA PRGs/Hg Remedial Goal^	TCLP MCC
TCLP Pesticides (ug/L)								
gamma-BHC (Lindane)	--	--	--	--	0.25 U	--	NA*	400
Endrin	--	--	--	--	0.25 U	--	NA*	20
Heptachlor	--	--	--	--	0.25 U	--	NA*	8
Heptachlor epoxide	--	--	--	--	0.25 U	--	NA*	8
Methoxychlor	--	--	--	--	0.25 U	--	NA*	10,000
Toxaphene	--	--	--	--	5.0 U	--	NA*	500
Chlordane	--	--	--	--	5.0 U	--	NA*	30
TCLP Herbicides (ug/L)								
2,4-D	--	--	--	--	5.0 U	--	NA*	10,000
Silvex	--	--	--	--	5.0 U	--	NA*	1,000
Other								
Reactive Cyanide (mg/kg)	--	--	--	--	0.020 U	--	NA*	500
Reactive Sulfide (mg/kg)	--	--	--	--	9.5 U	--	NA*	11,000

Notes:

When a sample concentration exceeds a remedial goal/benchmark, the concentration is highlighted with that remedial goal's/benchmark's color.

EPA PRGs = U.S. Environmental Protection Agency Region 9 Preliminary Remediation Goals for Residential Soil.

Hg = mercury

mg/kg = milligrams per kilogram (equivalent to parts per million [ppm])

mg/L = milligrams per liter (equivalent to parts per million [ppm])

NA = not available. An EPA PRG for Residential Soil does not exist for the associated parameter.

NA* = not applicable. TCLP MCCs are compared to TCLP analytical results only. EPA PRGs are compared to TCL organics and TAL metals only.

SVOC = semivolatile organic compound

TAL = target analyte list

TCL = target compound list

TCLP = Toxicity Characteristic Leaching Procedure

TCLP MCC = Toxicity Characteristic Leaching Procedure, Maximum Concentration of Contaminant, as listed in Table 1 of 40 CFR, Part 261.24.

TPH = Total Petroleum Hydrocarbon (DRO = diesel range organics; GRO = gasoline range organics)

µg/kg = micrograms per kilogram (equivalent to parts per billion [ppb])

µg/L = micrograms per liter (equivalent to parts per billion [ppb])

VOC = volatile organic compound

-- = indicates the compound/metal was not analyzed

^ = total mercury analytical results were compared to a remedial goal of 20 mg/kg, in accordance with the site-specific risk-based concentration established for the soil clean-up goal in the model project.

Data qualifiers:

E = indicates that the concentration detected exceeded the calibration range of the instrument.

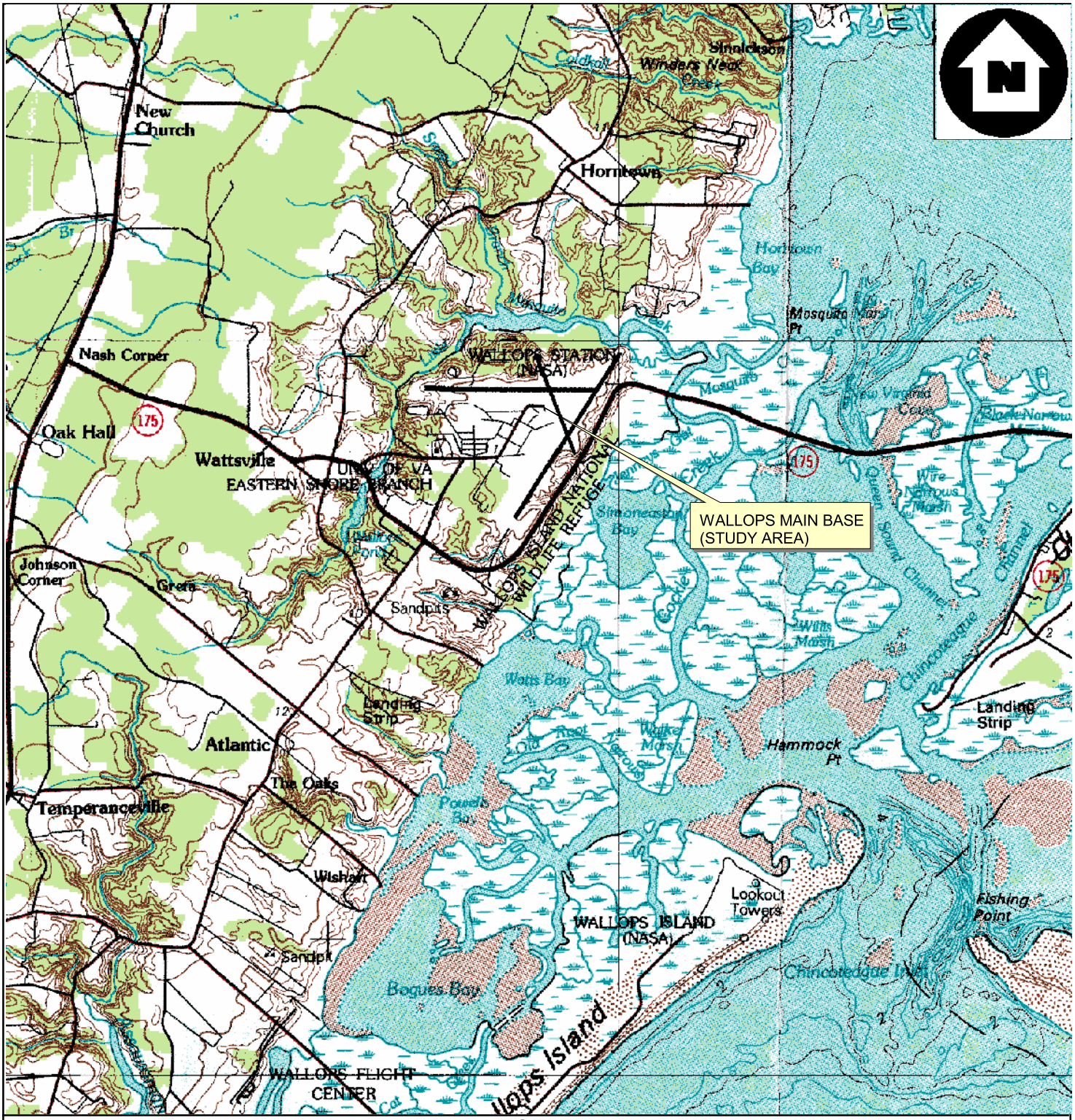
J = indicates the substance was detected at an estimated concentration less than the reporting limit.

N = indicates that the spike sample recovery not within control limits.

U = indicates the substance was analyzed for, but not detected. The associated numerical value is the reporting limit.

* = indicates the duplicate analysis was not within control limits.

FIGURES



Base Map is a portion of the following 30 x 60' USGS Quadrangle(s):
Chincoteague, VA.-MD., 1981.

LEGEND

1 0 1 2 3 4 5 Kilometers

1 0 1 2 3 4 5 Miles

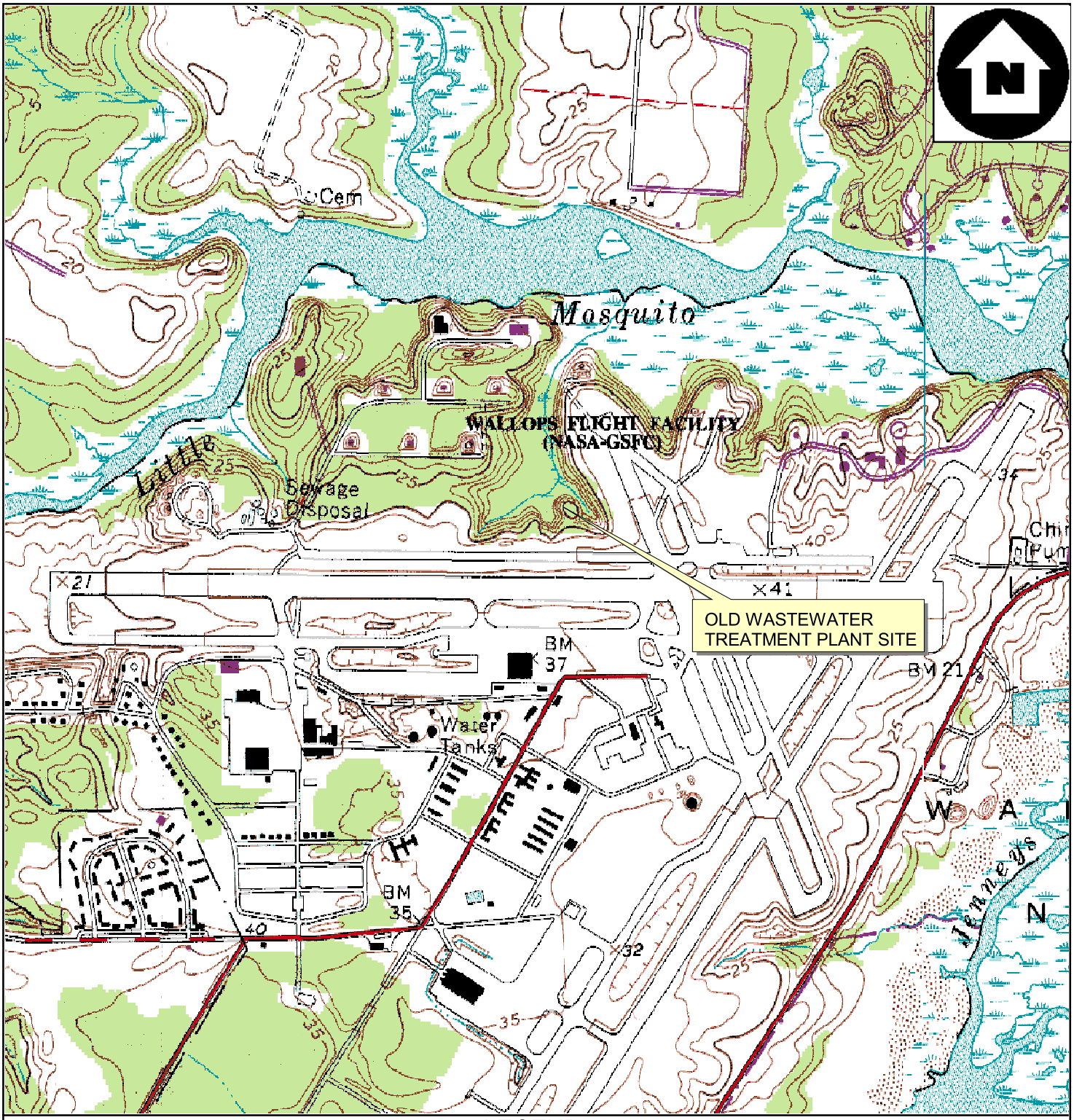
5000 0 5000 10000 15000 20000 Feet

AREA-WIDE LOCATION MAP

OLD WASTEWATER TREATMENT PLANT
WALLOPS FLIGHT FACILITY
WALLOPS MAIN BASE
ACCOMACK COUNTY, VIRGINIA

WESTON SOLUTIONS
Restoring Resource Efficiency

W.O. No.: 03886-183-029	DRAWN BY: PHS	DATE: 08/16/2006
FILE LOCATION\NAME: I:\GIS_DATA\PROJECTS\WALLOPS\WWTP\REMOVAL\WALLOPS.APR		FIGURE 2-1



Base Map is a portion of the following 7.5 x 7.5' USGS Quadrangle(s):
Chincoteague West, VA., 1965; Photorevised 1986; Photoinspected 1989.

LEGEND

0.5 0 0.5 1 Kilometers

0.25 0 0.25 0.5 0.75 1 Miles

1000 0 1000 2000 3000 4000 5000 6000 Feet

SITE LOCATION MAP

OLD WASTEWATER TREATMENT PLANT
WALLOPS FLIGHT FACILITY
WALLOPS MAIN BASE
ACCOMACK COUNTY, VIRGINIA

WESTON SOLUTIONS
Restoring Resource Efficiency

W.O. No.: 03886-183-029	DRAWN BY: PHS	DATE: 08/16/2006
FILE LOCATION\NAME: I:\GIS_DATA\PROJECTS\WALLOPS\WWTP\REMOVAL\WALLOPS.APR		FIGURE 2-2

Base Map is a portion of the following Digital Orthophoto Quarter-Quadrangles (DOQQ) (s):

Chincoteague West NW, VA . 1994.

LEGEND

0.5 0 0.5 Kilometers

500 0 500 1000 1500 2000 2500 3000 Feet

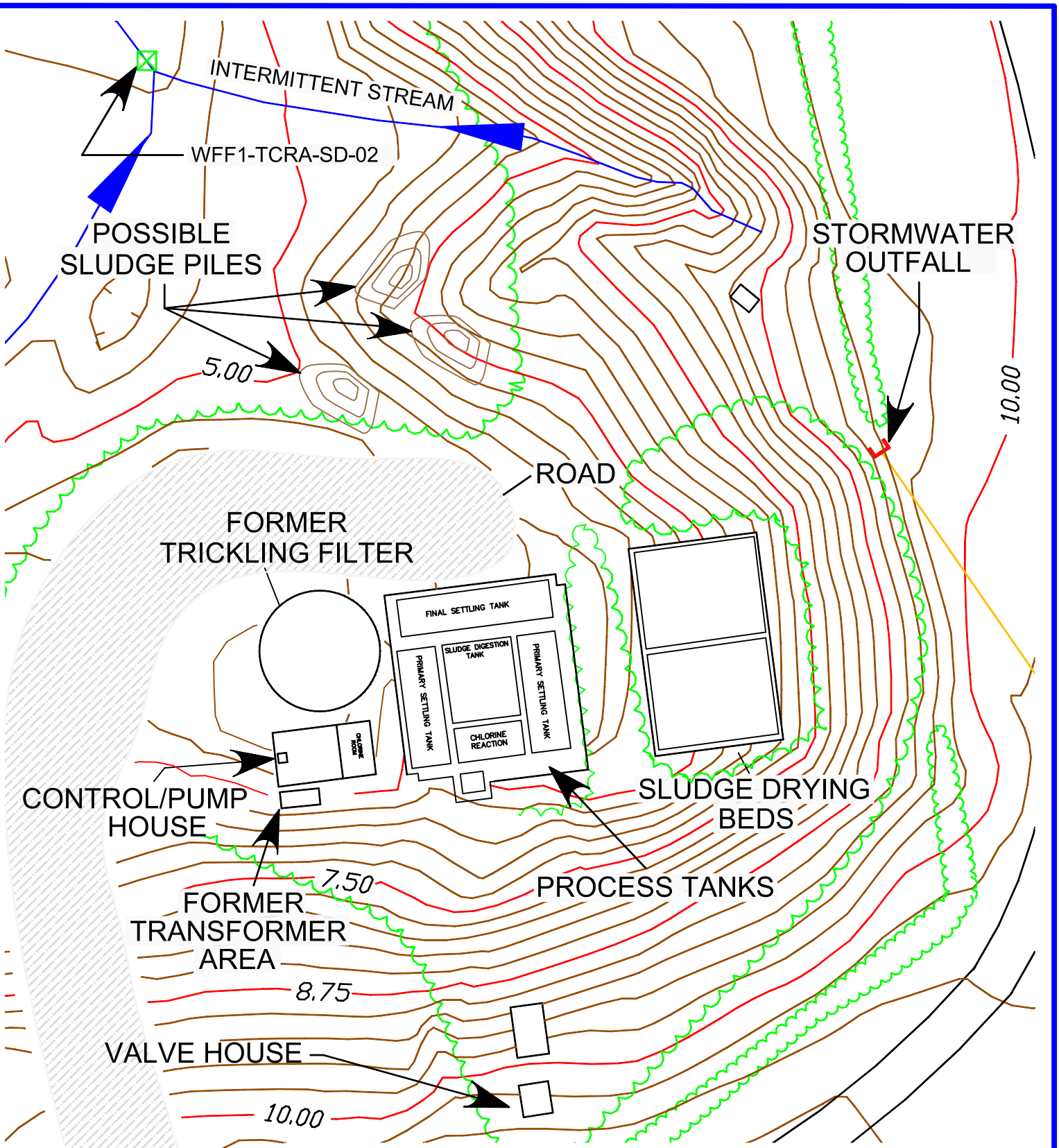
0.1 0 0.1 0.2 0.3 0.4 0.5 Miles

SITE LOCATION AERIAL

OLD WASTEWATER TREATMENT PLANT
WALLOPS FLIGHT FACILITY
WALLOPS MAIN BASE
ACCOMACK COUNTY, VIRGINIA

WESTON SOLUTIONS
Restoring Resource Efficiency

W.O. No.: 03886-183-029	DRAWN BY: PHS	DATE: 08/16/2006
FILE LOCATION\NAME: I:\GIS_DATA\PROJECTS\WALLOPS\WWTP\REMOVAL\WALLOPS.APR		FIGURE 2-3



N

SCALE 1" : 26'

8.75 Meters Above Mean Sea Level

0.2 Meter Contour Line

Trees/Vegetation

Gravel/Crush and Run

SEDIMENT SAMPLE

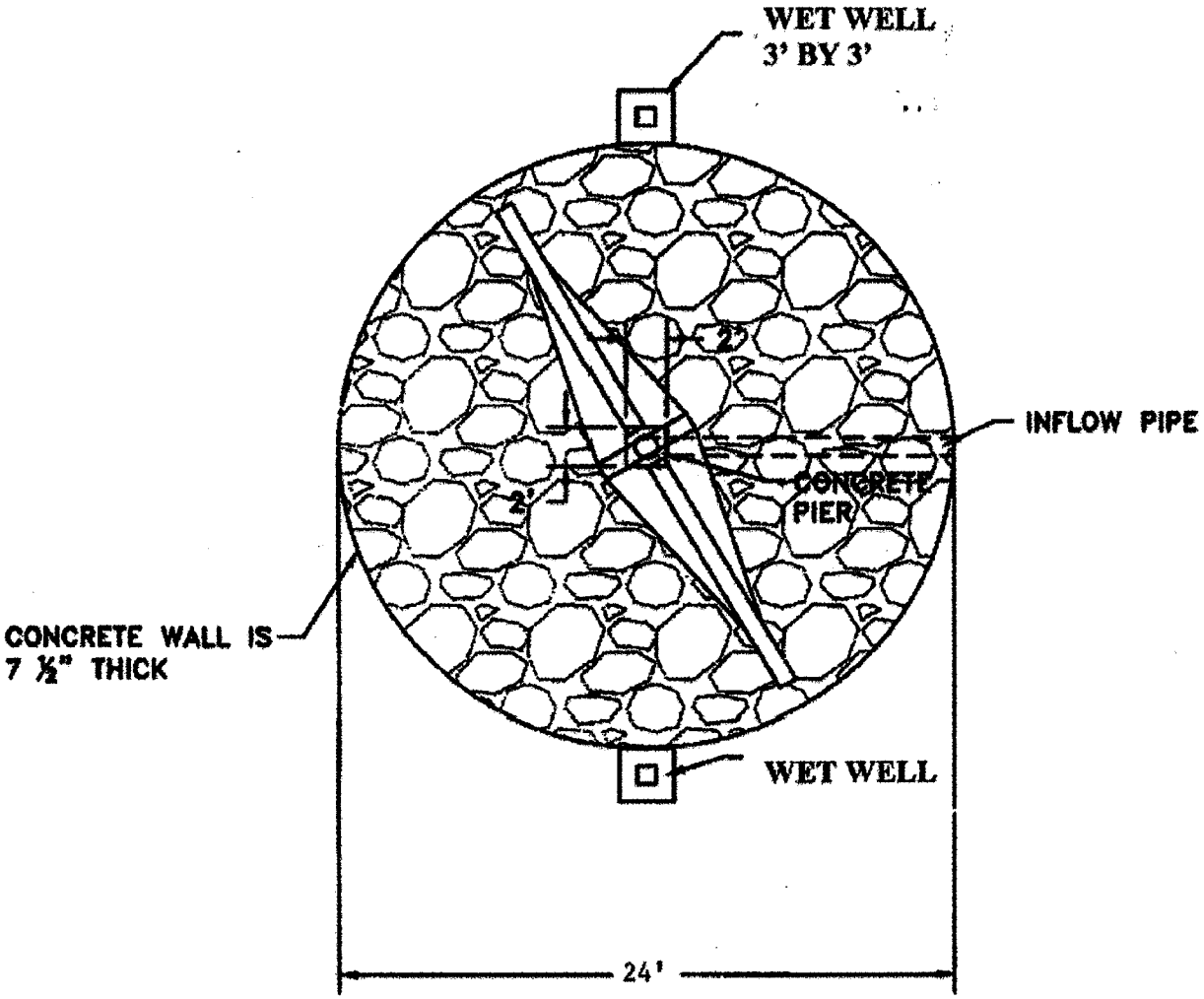
WESTON SOLUTIONS

Restoring Resource Efficiency

FIGURE	2-4
DATE	8/11/06
REVISION	2
DRAWN BY	G. FORD
FILE:	K:\COE 03886\Wallops Removal\Removal Report\Draft Removal Report\Figures\Fig 2-4

OLD WASTEWATER TREATMENT PLANT EXISTING SITE CONDITIONS MAP

WALLOPS FLIGHT FACILITY, MAIN BASE
ACCOMACK COUNTY, VIRGINIA

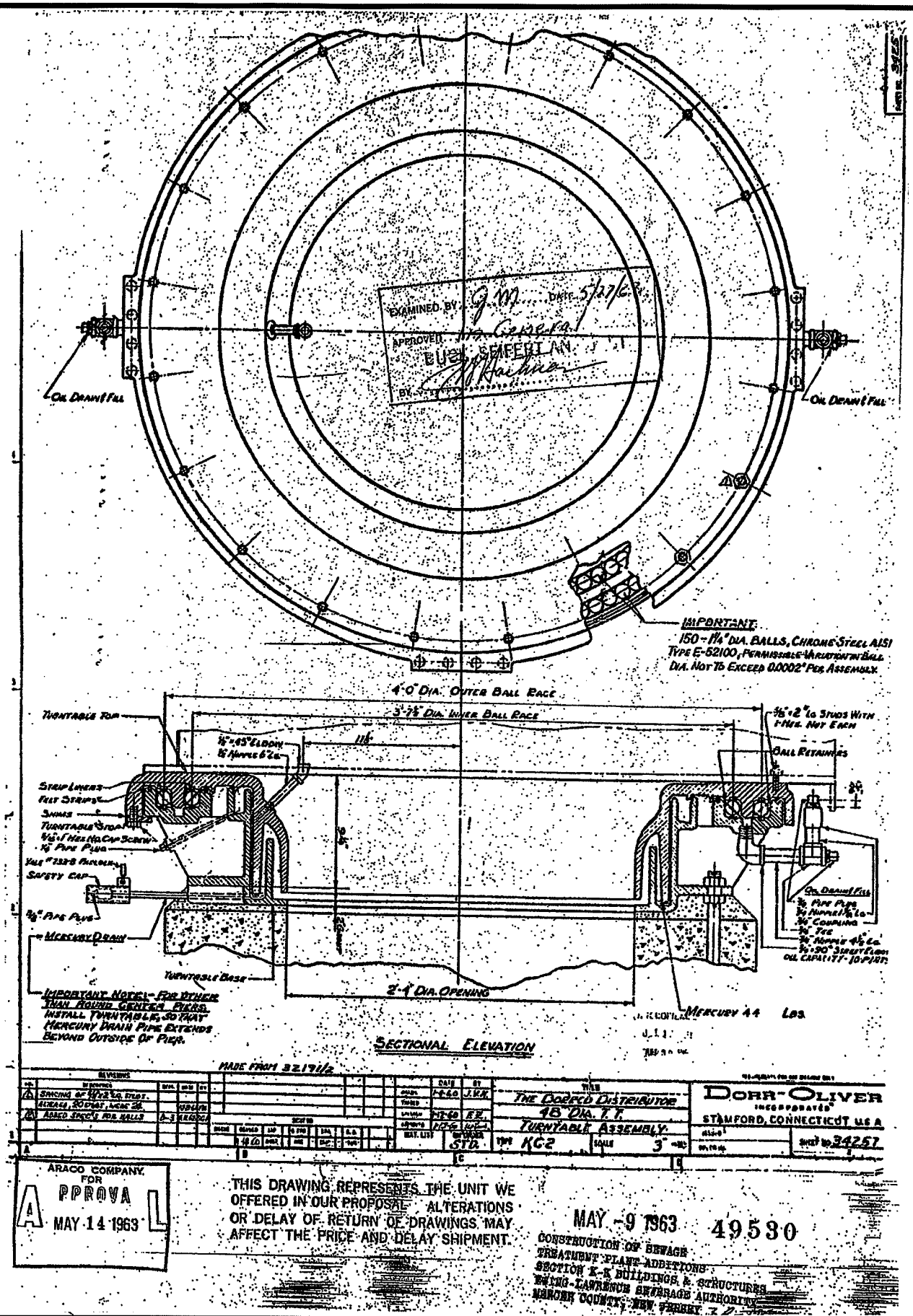


LEGEND

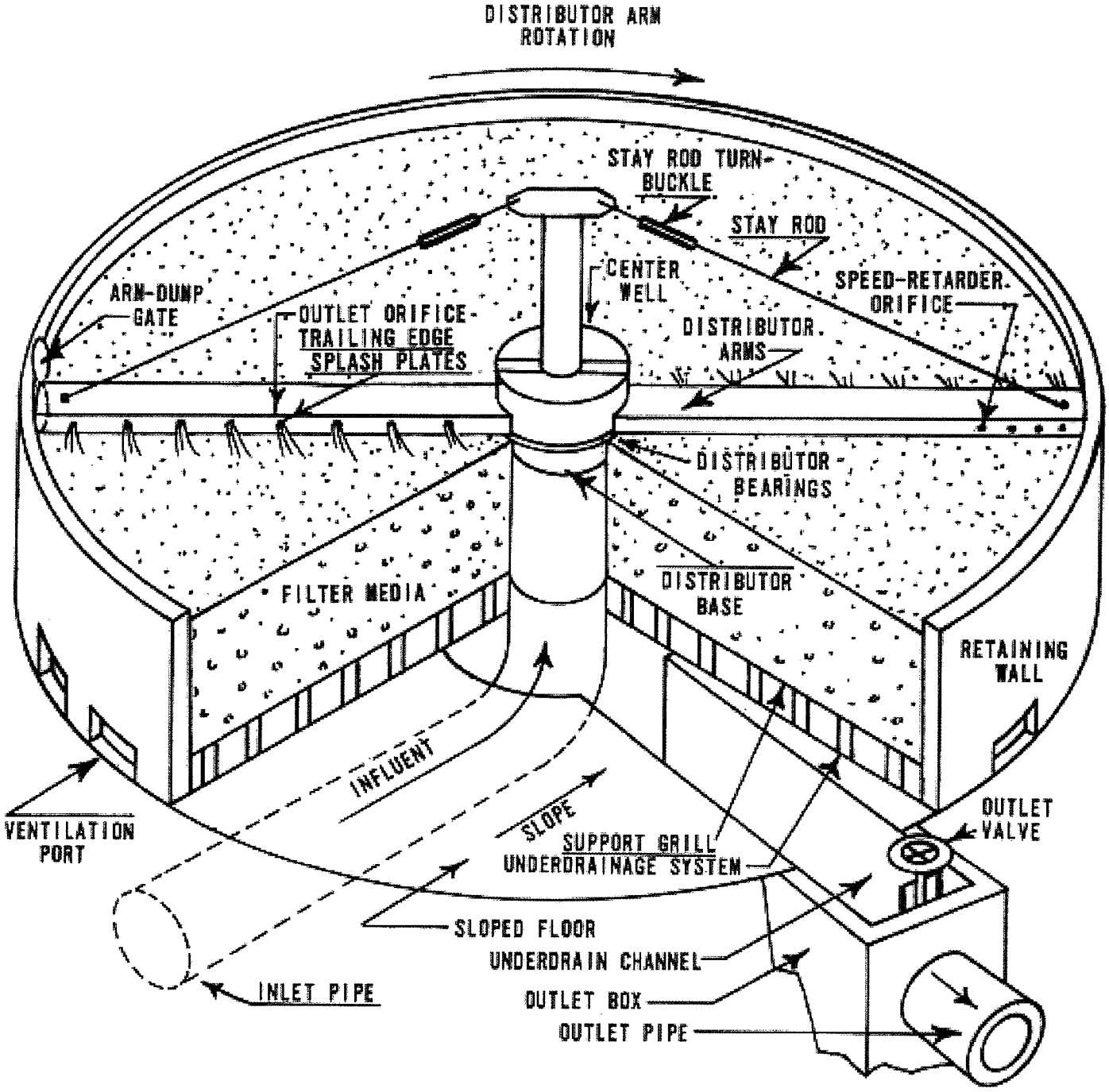
– STONE

NOT TO SCALE

WESTON SOLUTIONS Restoring Resource Efficiency	FIGURE 2-5	OLD WASTEWATER TREATMENT PLANT TYPICAL TRICKLING FILTER DETAIL
	DATE 8/16/06	
	REVISION 1	WALLOPS FLIGHT FACILITY, MAIN BASE ACCOMACK COUNTY, VIRGINIA
	DRAWN BY GCF	
	FILE: K:\COE 03886\Wallops Removal\After Action Report\Draft After Report\Figures\FIG 2-5	



WESTON SOLUTIONS Restoring Resource Efficiency	FIGURE 2-6	OLD WASTEWATER TREATMENT PLANT DORR-OLIVER TYPICAL AS-BUILT
	DATE 8/16/06	
	REVISION 1	WALLOPS FLIGHT FACILITY, MAIN BASE ACCOMACK COUNTY, VIRGINIA
	DRAWN BY GCF	
	FILE: K:\COE 03886\Wallops Removal\After Action Report\Draft After Report\Figures\FIG 2-6	



WESTON SOLUTIONS Restoring Resource Efficiency	FIGURE 2-7	OLD WASTEWATER TREATMENT PLANT 3-DIMENSIONAL VIEW OF A TRICKLING FILTER
	DATE 8/16/06	
	REVISION 1	WALLOPS FLIGHT FACILITY, MAIN BASE ACCOMACK COUNTY, VIRGINIA
	DRAWN BY GCF	
	FILE: K:\COE 03886\Wallops Removal\After Action Report\Draft After Report\Figures\FIG 2-7	

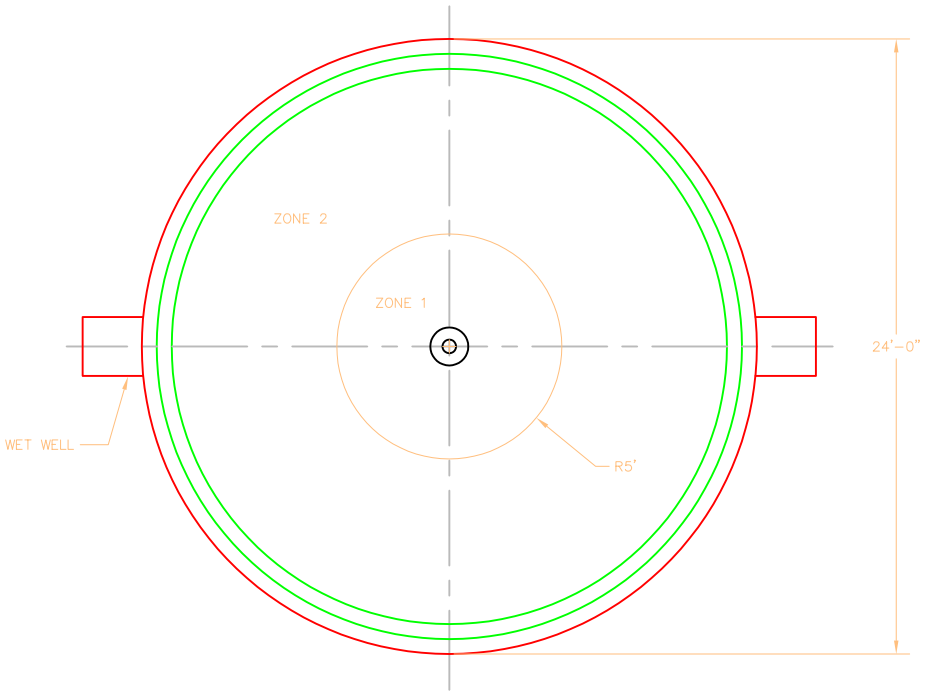
M-1

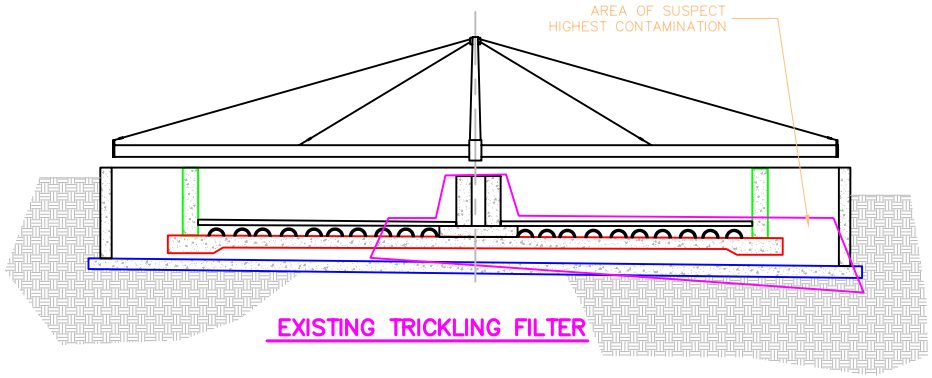
NOT TO SCALE

FIGURE 2-8

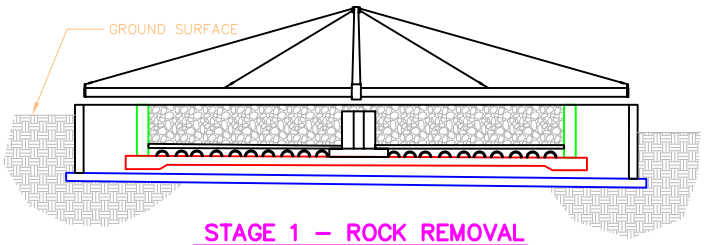
OLD WASTEWATER TREATMENT PLANT
MECHANICAL DEMOLITION PLAN

WALLOPS FLIGHT FACILITY, MAIN BASE
ACCOMACK COUNTY, VIRGINIA

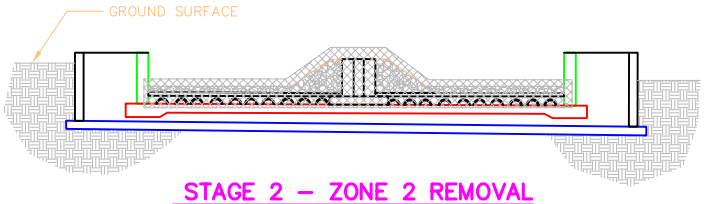




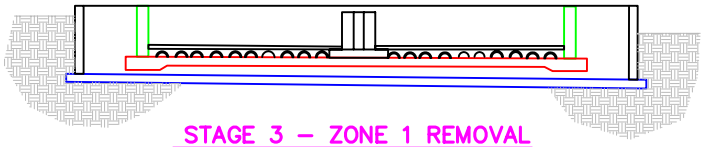
EXISTING TRICKLING FILTER



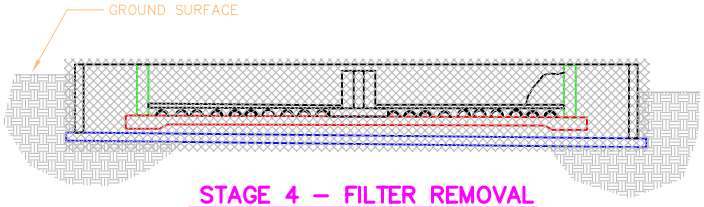
STAGE 1 – ROCK REMOVAL
SCALE: N.T.S.



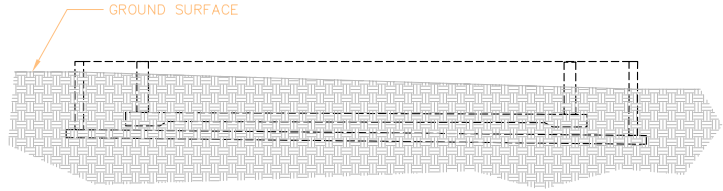
STAGE 2 – ZONE 2 REMOVAL
SCALE: N.T.S.



STAGE 3 – ZONE 1 REMOVAL
SCALE: N.T.S.



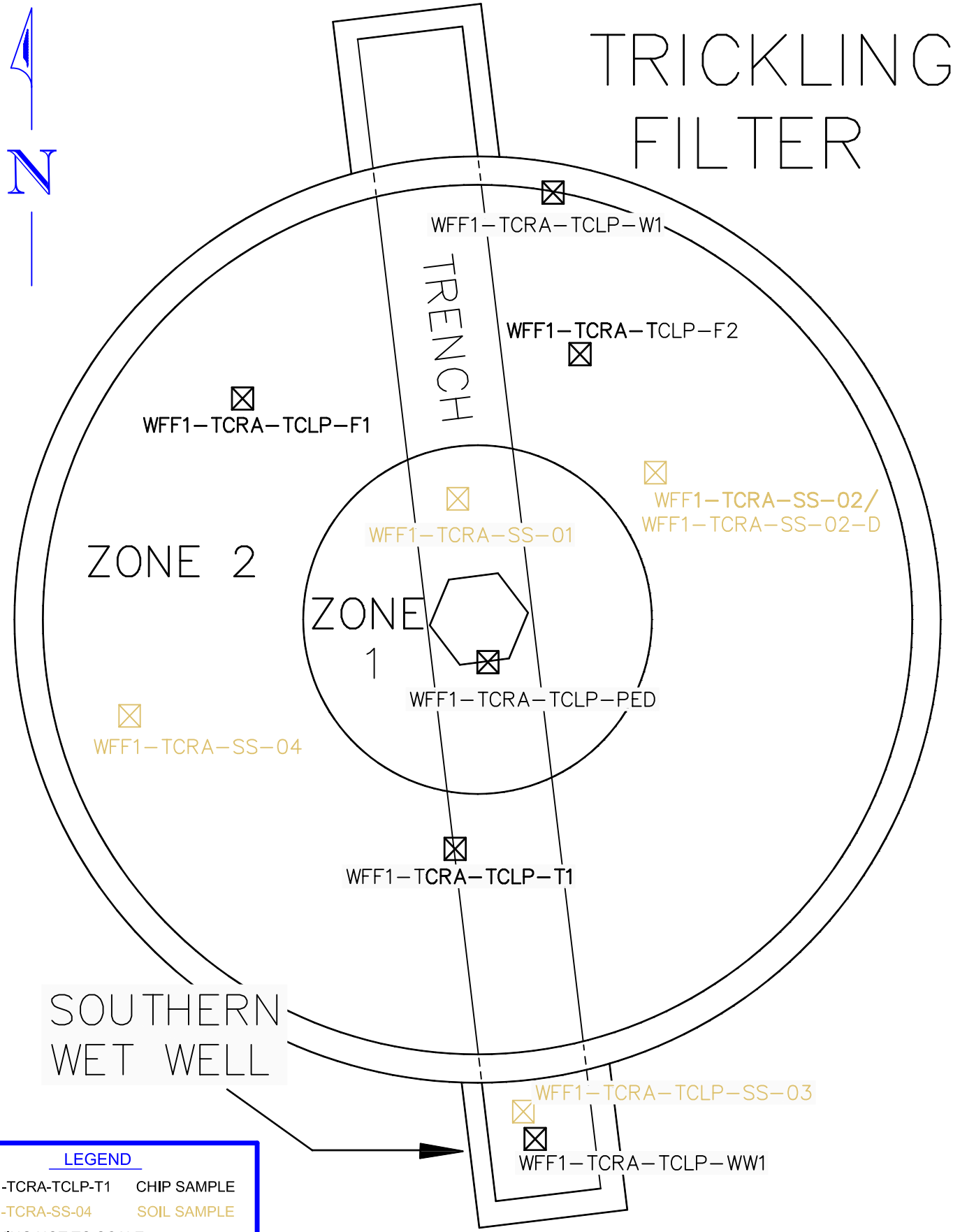
STAGE 4 – FILTER REMOVAL
SCALE: N.T.S.



STAGE 5 SITE RESTORATION
SCALE: N.T.S.

DRAWN: WS/CCF
DATE: 3.11.06
CHECKED: M. SNEED
DATE: 3.11.06
W.O. NO.: 03886.183.029.0400
DRAWING NO.: C-1.DWG

WESTON SOLUTIONS



LEGEND

WFF1-TCRA-TCLP-T1 CHIP SAMPLE

WFF1-TCRA-SS-04 SOIL SAMPLE

DRAWING NOT TO SCALE

WESTON SOLUTIONS
Restoring Resource Efficiency

FIGURE	3-1
DATE	8/11/06
REVISION	2
DRAWN BY	GCF
FILE: K:COE 03886\Wallops Removal\Removal Report\Draft Removal Report\Figures\Fig 3-1	

CONFIRMATORY SAMPLE LOCATIONS MAP

OLD WASTEWATER TREATMENT PLANT
WALLOPS FLIGHT FACILITY, MAIN BASE
ACCOMACK COUNTY, VIRGINIA

APPENDIX A

FIELD NOTES

Location Wallops Flight Facility Date 5/8/06

Project / Client TCRA

mid 50°s rain

0906 Ed Mackey (EJM) on site, getting badge.

0920 EM checks in w/NASA team. Carolyn Turner indicates TJ getting dig permit and radios. EM organizes.

0945 Steve Gogan (IMS) calls to indicate wind restrictions on Chesapeake Bay Bridge and can't cross, will arrive late.

1045 EM gets radios + walks site.

1244 IMS on site.

1255 EPA, DEQ, USACE team on site.

1345 IMS begins installing silt fence, stakes on down gradient side. Steve Gogan also indicates IMS will not be working weekends. IMS will cut in road after silt fence installed.

1530 Silt fence in place, begin cutting road

1700 Road cut complete.

1730 Weston + team depart site for day

EJ Mackey

end of day

Location WFF WWTP #1 Date 5/9/06

Project / Client TCRA

0659 Weston + IMS at site.

0745 1st load of gravel arrives.

0825 2nd load of gravel arrives. Note each load is 18 tons.

0912 3rd + 4th load of gravel arrives 4th truck had 15 tons.

0930 EM activates Lumex meter to collect some background readings Readings based on 10 second average Background at top of hill was 18 ng/m^3 At mercury seal reading was 10,600 ng/m^3 Upwind of trickle filter was 24 ng/m^3 Clean rocks 40 to 65 ng/m^3. The most conservative indoor action level (residential) is 1,000 ng/m^3. Therefore the action level devised between Ed Mackey and Rob Real, will be to divide the residential by 2 and make the action level for screening rock 500 ng/m^3.

1000 5th truck drops 15 tons, has to be pulled out. Team decides to get 2 loads of crush+run to help compact road bed so that waste trucks will be able to access.

EJM

Location WWF WWTP #1 Date 5/9/06

Project / Client TCRA

1040 6th truck drops 15 ton of crush + run
EM has decanned hand auger with
Alconox + water to collect background
backfill sample + labelled bottles.
1110 7th truck drops 15 ton crush + run. EM
and R. Real. mob to C. Lee Davis to
sample potential backfill material.
1140 Sample collected for VOC, DRO, GRO, SVOC
+ metals.
1200 8th + final truck drops 15 ton Crush + run
1215 EM preps/bags samples and bags ice, finishes
COC + seals cooler w/ COC inside.
1310 IMS begins dis-assembly of rotat-
or arms. Initial scan <120 ng/m³
1325 Cutting test piece to scan.
1411 Steel arms very tough to cut.
1600 Four arms removed, EM mobs to Fed
Ex samples crew prepping for rock removal
1650 Samples delivered to Fed Ex crew off site

end of day
EJ Mackey

Location WWF WWTP #1 Date 5/10/06

Project / Client TCRA

0700 EM on site w/ IMS crew. Back
hoe will not start, needs new battery
0750 Waste management delivers first
roll off 30 yard.
0900 H+S meeting conducted w/ IMS
team, USACE, + Weston. General items:
Don't proceed 25 yds west of access road
secure loads on pickup trucks
Slips trips + falls
Keep work area clean
Hot zone demarcation
CRZ zone demarcation
Level C upgrade at 45,000 ng/m³
Safe back hoe operation + eye contact
Prevent dehydration
1000 Real. + EM search for WWTP outfall
without succes.
1035 EM test Lumex R70 at 20%.
1030 1st scoop of rock, readings at 25 ng/m³
1040 Readings below 140 ng/m³.
1110 Chlorine room reading 40 ng/m³, rock
area between 89 to 165 ng/m³.
1140 Removing rock from Zone 2

EJ Mackey

Location WFF WWTP#1 Date 5/10/06

Project / Client TCRA

Process involves backhoe + operator, 2 team members in Level C scanning each 1/2 bucket load, prior to placing in roll-off. Readings so far have been below 300 ng/m³. AL is 500 ng/m³

1245 First rolloff (#1) has been filled w/ 15 tons of Zone 2 stone. Note that Lumex indicates elevated readings in base rock below clay tile

1300 Crew breaks for lunch. Backhoe rental repairman mobbing to site to check why battery dead in morning

1430 Wastemanagement drops rolloff #2 a 20 yard, and has no problem pulling Rolloff #1 up the hill + staging.

1510 Begin filling rolloff #2.

1544 Reading in bucket on loads in 200-300 range

1637 Filling rolloff #2.

1720 Rolloff #2 complete ≈ 15 tons Crew starts covering rolloff w/ tarps, secured by rope.

1800 Crew off site for day

E J Mackey
end of day

Location WFF WWTP #1 Date 5/11/06

Project / Client TCRA

0700 IMS crew and Weston on site

0800 H+S briefing held, discussed hand signals, awareness of backhoe and potential for storms in PM Rolloff #3 arrives on site.

0825 RO#3 in place. 30 yd. Lumex calibrated at 5% R value

0830 Lining RO#3.

0840 Begin filling RO#3

0935 Rob Reali arrives on site.

1005 RO#3 about 1/2 full on bottom on east side

1100 RO#3 full and tarped.

1130 RO#4 in place.

1200 Filling RO#4, reading < 100 ng/m³

1330 Filling RO#4 same range on readings

1405 RO#4 full and tarp is on.

1555 RO#5 in place.

1750 RO#5 is full. Prep for tarp.

1815 Tarp on, will move in AM.

E J Mackey
end of day

Location WFF WWTP#1 Date 5/12/06

Project / Client TCRA

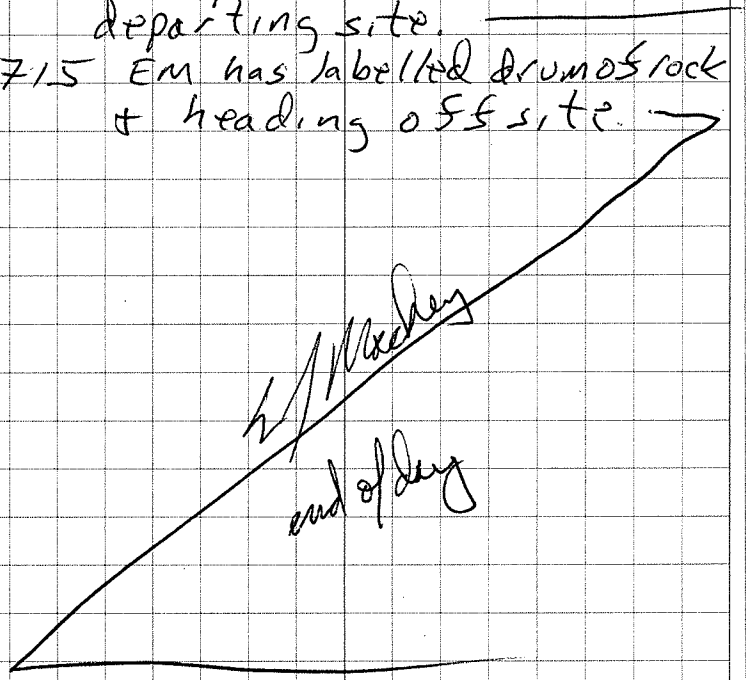
0700 Crew (5), USACE, + Weston on site.
0715 H+S Briefing, discussed sorting rock, trips + falls, tightening tarps TF entry, + backhoe awareness.
0730 RO #6 on site.
0800 RO#6 lined, Lumex calibrated.
0815 Begin Zone 2 rock removal for day.
1130 RO#6 filled, readings below 1,000 ng/m³
1200 Roll off truck late so team will do an entry to hand sort rocks directly below mercury drain.
1330 Mercury found to be dried on to rock screening indicates 20,000+ ng/m³ Rock placed in 55 gallon lined drum for haz disposal. Note, mercury that could be vacuumed was, but readings still elevated.
1430 Roll off driver arrives + moves RO #6 (will tarp at end of day)
1455 RO #7 in place, being lined.
1530 Mixing rock in TF to aerate from NE quadrant. Readings in the 2000 to 3000 range. Will let sit over weekend + scan monday.

EJM

Location WFF WWTP # Date 5/12/06

Project / Client TCRA

1600 Working SW quadrant of Zone 1 Some readings as high as 1500 ng/m³ These rocks will let aerate + retest other rock below, + placed in RO 7
1630 Into higher readings, will mix rock around, spread out and let aerate over the weekend.
1705 Tarp on RO #6, crew departing site.
1715 EM has labelled drum of rock + heading off site.



Location WFF WWTP #1 Date 5/15/06

Project / Client TCRA / USACE

(G. FORD NOW RECORDING)

0750 G. FORD ON SITE - WILL GET BADGE AT FRONT GATE. PROCEED TO OLD WWTP. 5 MAN IMS CREW AT SITE. MET WITH D. REALI.

1020 LUMEX CALIBRATED AT 12% R VALUE. INITIAL READINGS: (ng/m³)

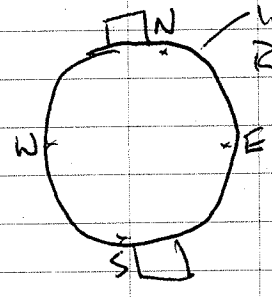
WEST - 49???

NORTH - 1200

EAST - <100

SOUTH - 7200

NOT ORIENTED WITH COMPASS - ROUGH LOCS.



1030 IMS CREW USING BACK HOE BUCKET AND SHOVELING STONE FROM ZONE 2. D. REALI (USACE) SPREAD MERSORB POWDER IN AREAS WITH HIGH READINGS (>1000 ng/m³).

Location WFF WWTP #1 Date 5/15/06

Project / Client TCRA / USACE

1058 READINGS FROM LUMEX STILL HIGH, SUSPECT BUCKET OF BACK HOE IS SOURCE - DECON BACK HOE BUCKET.

1149. READINGS STILL >1000 ng/m³. BEGIN HAND INSPECTION AND SORTING / VACUUMING.

1230 HAND SORTING ROCK AROUND PEDESTAL.

1300 FOUND 3 POOLS OF LIQUID Hg_2 ON TOP OF CONCRETE ON NORTH SIDE OF PEDESTAL.

1620 SPENT LAST FEW HOURS VACUUMING AROUND PEDESTAL. FOUND 3-4 POOLS OF LIQUID Hg_2.

1640 NOW PUTTING ZONE 2 ROCK INTO ROLL OFF #7. SCREENING LEVEL FOR RO #7 IS 50,000 ng/m³.

1740 COVER RO #7 BEFORE LEAVING SITE.

Location WFF WWTP #1 Date 5/16/06

Project / Client TCRA / USACE

0710	G. Ford On Site. IMS Crew Finishes Tailgate H&S Meeting. G. Ford Discusses DeCon Procedures And Housekeeping Reminder.
0735	Roll Off #7 Staged And Replaced With RO #8. RO #7 Contains Zone 2 Rock, Estimated Volume Is 20 Tons.
NOTE:	When Liquid Hg. Is Vacuumed, IMS Crew Removes That Vacuum Cup, Seals With Lid, And Places All Cups In A Specific 55-Gal Drum.
1145	All Rock From Zone 1 Being Hand Sorted And Screened. Amalgamated Hg Evident On Some Rock. All Zone 1 Rock & Sludge Being Placed In 55 Gal. Drums. These Drums Will Be Judged As Haz Waste Without Sampling. Typical Readings Exceed 50,000 - 70000 ng/m³.
1440	Concrete Grates Covering Trench Reading High, (10,000 - 20,000 ng/m³). Grates Are Sprinkled With Water, Mersorb Powder Is Sprinkled, Then Grates Are Scrubbed And Re-Screened. Cleaning, Not Having A Great Impact On Grates, Suspect Volatilization Will Occur With Sunlight. Grates Placed In RO #8

RC/FO

Location WFF WWTP #1 Date 5/17/06

Project / Client TCRA/USACE

0705	G. Ford Onsite.
0725	Crew Will Remove All Remaining Debris From The Interior Of The Filter Area.
1240	Crew Has Been Cleaning Surface Concrete By Water / Mersorb / Scrubbing. Trench Now Clear Of Rock & Sludge/Sediment. G. Ford Prepares To Sample South Wet Well Sed.
1315	- Sample Collected At 1255. (SD-01)
	- Lunch -
1430	Prepare To Collect Concrete Chip Samples. Lumex Readings Sporadically High (30-40 K) Will Collect Samples In Level C.

NOTE: This Is At Concrete Surface, Bz Reading Much Lower, But Declined Level C Was Appropriate Due To Phys. Exertion Of Obtaining Chip Samples.

R. Reali And G. Ford Pre-Determines Location Of Chip Samples. Small Jack Hammer Used To Get Started In Each Area.

RC/FO

Location WFF WWTP#1 Date 5/17/06 (CONT)

Project / Client TCRA / USACE

1700 COLLECT ROCK SAMPLES FROM ROLL OFFS. ONE SAMPLE WILL BE A COMPOSITE FROM RO's #1-6, ANOTHER SAMPLE WILL BE A COMPOSITE FROM RO #7.

NOTE: PEDESTAL ARM WAS REMOVED AND PLACE IN GREEN OVERSIZE DRUM. POLY SHEETING WAS LAID OUT AND MS CREW WAS READY IN LEVEL C WITH VACUUM INCASE ANY LIQUID Hg_2 WAS SEEN.
SMALL AMOUNT OF LIQUID Hg_2 VACUUMED.
ALL PREVIOUS CANISTERS FROM VACUUM CONTAINING LIQUID Hg_2 NOW PLACED IN GREEN DRUM.

1735 PEDESTAL PIER DEMOLITION COMPLETE. MAIN FILTER AREA CONCRETE DEMOLITION BEGINS.

1640 END OF DAY

Location WFF WWTP#1 Date 5/18/06

Project / Client TCRA / USACE

0710 G. FORD ON SITE.
MS CREW PREPARING FOR DEMO ACTIVITIES.

0900 PREPARE TO SAMPLE STANDING WATER IN PUMP HOUSE. CLEARED AREA AROUND DOOR AND JUST INSIDE P.H. SOLID CONCRETE FLOOR NEXT TO OPENING INSIDE AND TO RIGHT OF DOOR.

0930 SAMPLES COLLECTED USING BAILER.

1100 PREPARE TO COLLECT OUTFALL SEDIMENT SAMPLE. R. REALI (USACE) AND G. FORD DETERMINE LOCATION.

1115 SEDIMENT SAMPLE COLLECTED. (SED 2)

1140 SERVICE MAN ARRIVES TO FIX CONCRETE HAMMER ON BACK HOE.

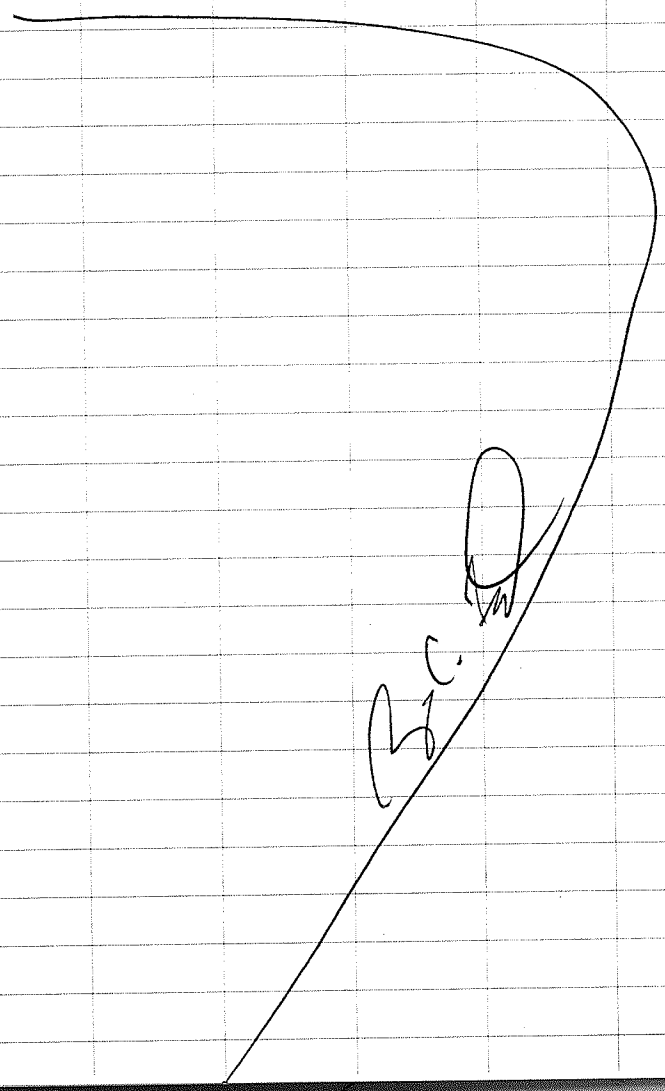
1430 ~~STL~~ BTL LAB ⓒ COURIER ARRIVES. G. FORD GETS 2 BOTTLES FROM HIM THEN RETURNS TO SITE TO COLLECT COMPOSITE ROCK/SLUDGE SAMPLES FROM DRUMS. TAKE ALL COLLECTED SAMPLES TO COURIER FOR CUSTODY EXCHANGE.

1740 SIGNIFICANT AREA OF BASE MATERIAL UNDER CONCRETE NOW EXPOSED. WILL COLLECT SOIL SAMPLES FROM FILTER AREA NOW DUE TO THREATENING WEATHER. SOUTH WET WELL NOT ACCESSIBLE YET.

Location WFF WWTP #1 Date 5/18/06

Project / Client TCRA / USACE

1815 3 SOIL SAMPLES COLLECTED.
END OF DAY



Location WFF WWTP #1 Date 5/19/06

Project / Client TCRA / USACE

0705 G. FORD ON SITE
CONCRETE DEMO ACTIVITIES.
0815 CONCRETE HAMMER NEED ANOTHER SERVICE CALL. DRIVER 2 HRS AWAY.
G. FORD AND 1 IMS CREW CLOSED OFF PUMP HOUSE DOORWAY WITH SNOW FENCE NAILED TO DOOR FRAME. (NOWHERE TO PUT FENCE POSTS DUE TO BLDG SLAB.) G. FORD COVERED HOLE WITH A WOOD SHEET, SPRAY PAINTED "HOLE" ON SHEET.
1135 SERVICE CALL COMPLETE. RESUME DEMO.
1300 PREPARE TO COLLECT SOIL SAMPLE UNDER SOUTH WET WELL.
NOTE: G. FORD WILL RE SAMPLE CERTAIN DRUMS FOR WASTE CHARACTERIZATION. PREVIOUS SAMPLE SHOULD NOT HAVE INCLUDED ALL DRUMS - AS SOME ARE ASSUMED TO BE HAZ WASTE.
CONCRETE DEMO COMPLETE.
BEGIN DEMOB PROCEDURES
- RE TARP ROLL OFFS
- COVER EXCAVATION
↳ BLDG FELT & POLY SHEETING.
- CHECK LABELS ON DRUMS.
- DEPART SITE AFTER PUTTING UP FENCE.

Location WFF Date 5/30/06

Project / Client TCRA

0500 Depart Raleigh for site.
1000 On site, get radios.
1015 IMS on site, w/Backhoe
1030 H+S briefing, first truck of fill soil arrives.
1200 Waste managment is yet to arrive to pick up rolloffs. Two additional trucks of backfill have arrived approximately 18 tons per.
1630 Waste management still has not arrived. Placed rocks from drums 1 through 5 in rolloff #2 for non-haz disposal, Five additional loads of soil at site. Tomorrow 2 loads of topsoil to be delivered for seeding. Waste Mgmt indicates trucks will be on site tommorow.

end of day

5/30/06

E/Mackey

Location WFF WWTP Date 5/31/06

Project / Client TCRA

0800 IMS + Weston on site, first load of topsoil delivered but backhoe won't start. H+S meeting conducted.
1300 2nd load of topsoil delivered backhoe getting new battery. Waste Mgmt has not been on site since 0830. One rolloff removed.
1540 Waste mgmt picks up second rolloff, topsoil spread on excavation area, seed + straw emplaced.
1645 Off site for day

end of day

E/Mackey

5/30/06

Location WWF WWTP Date 6/1/06

Project / Client TCRA

0830 Weston & IMS on site, H&S meeting. Waste Mgmt not on site. IMS calls again

1100 EM collects rock sample for total metals + TCLP metals (WFFI-TCRA-TCLP DR6-8) from drums 6 through 8.

1130 Waste management picks up Roll-off Number 3. Will not be back on site until late today. EM departs site for Raleigh. Holland Moore of IMS will stay on site until roll offs are removed.

end of log
6/1 Mueller

6/1/06

Location WFF WWTP #1 Date 6/8/06

Project / Client TCRA / USACE

G. FORD

0600 DEPART FOR SITE.

1130 ARRIVE AT WALLOPS MAIN BASE GATE. CALL TJ MEYER FOR ESCORT TO OLD WWTP.

1145 BEGIN OPENING DRUMS C-8 FOR SAMPLE COLLECTION. PPE IS FULL FACE RESPIRATOR WITH MERSORB CARTRIDGES AND 2 LAYERS OF NITRILE GLOVES. GLOVES WILL BE PLACED IN PPE DRUM.

1330 COLLECTED SAMPLE WFFI-TCRA-TCLP.DR6-8. PREPARE TO DEPART SITE.

1700 FED EX LOCATION CLOSED EARLY. PROCEED TO RALEIGH LOCATION.

2010 SHIP SAMPLE VIA FED EX.

6/8/06

APPENDIX B

DAILY QC/WORK SHEET REPORTS

Daily QC Report

CONTRACT NO./ D.O. NO.:	WORK ORDER NO.	DATE
DACW33-00-D-007	03886.183.029.0300	05/08/2006

WEATHER/TEMPERATURE: Mid- 50 degrees, periods of light rain.

WORK LOCATION: Old WWTP #1, Wallops Flight Facility

WESTON PERSONNEL:	APPROVED EQUIPMENT ON SITE:	VISITORS (REPRESENTING):
Ed Mackey	Bulldozer	NASA, USACE, VDEQ, and USEPA
	182 Ditchwitch	
	Rubber Tire Backhoe	

SUBCONTRACTOR:	TRADE/SERVICE:
IMS 4-member team	Trickling Filter Removal

WORK COMPLETED BY WESTON Team:

Work scheduled for the day: Mobilization of equipment and crew, installation of silt fence, earthwork for gravel road.

Work Completed Today:

Work noted above was accomplished. Sub-contractor incurred difficulty crossing Chesapeake Bay Bridge Tunnel due to high winds.

Work Scheduled for Tomorrow: Install filter fabric for road, complete road work, dis-assemble rotator arms, remove sediment/soil from arms, scan sediment/soil and arms for potential mercury impact, set up decontamination area, collect soil samples from potential back-fill material, and ship to GPL for analysis. Additional work may include delivery of first roll-off container and initiation of rock removal.

HEALTH AND SAFETY:

Initial H&S meeting conducted regarding site activities. Additional and more rigorous meetings will be conducted prior to initiation of trickling filter-specific H&S will be conducted prior to actual rock removal

.

MATERIALS DELIVERED (Amount, Condition, and Purpose):

Dozier, ditchwitch, and rubber tire backhoe.

ISSUES AND/OR ITEMS OF DISCUSSION:

☒ **Discussion** ☐ **Minor Construction Change** ☐ **Material Design Change** ☐ **Cost or Schedule Impact**

H&S, mobilization, general planning, and specific coordination with NASA personnel were discussed. Site radios (five) were loaned to Weston by NASA. NASA, USACE, VDEQ, and USEPA representatives visited the site and were given copies of the Final Work Plan.

PROBLEMS/RESOLUTIONS: Weston sub-contractor had issues crossing the Chesapeake Bay Bridge Tunnel with assorted equipment due to high winds, and was delayed by three hours. Equipment (drums, generator, etc) will be transported to the site on 5/9/06. Delays will not significantly impact the project schedule.

ANALYTICAL/INSPECTION DATA (List items here and results, attach appropriate data/information):

N/A

PREPARED BY:	SIGNATURE:
Ed Mackey	E J Mackey

Daily QC Report

CONTRACT NO./ D.O. NO.:	WORK ORDER NO.	DATE
DACW33-00-D-007	03886.183.029.0300	05/09/2006

WEATHER/TEMPERATURE: Mid- 70 degrees clear.

WORK LOCATION: **Old WWTP #1, Wallops Flight Facility**

WESTON PERSONNEL:	APPROVED EQUIPMENT ON SITE:	VISITORS (REPRESENTING):
Ed Mackey	Bulldozer	
	182 Ditchwitch	
	Rubber Tire Backhoe	
SUBCONTRACTOR:	**TRADE/SERVICE:**	
IMS 4-member team	Trickling Filter Removal	

WORK COMPLETED BY WESTON Team:

Work scheduled for the day:

Install filter fabric for road, complete road work, dis-assemble rotator arms, remove sediment/soil from arms, scan sediment/soil and arms for potential mercury impact, set up decontamination area, collect soil samples from potential back-fill material, and ship to GPL for analysis.

Work Completed Today:

Install filter fabric for road, complete road work, dis-assemble rotator arms, remove sediment/soil from arms, scan sediment/soil and arms for potential mercury impact (results were negative), collect soil samples from potential back-fill material, and ship to GPL for analysis.

Work Scheduled for Tomorrow:

Set up decontamination area, delivery of first two roll-off containers and initiation of rock removal.

HEALTH AND SAFETY:

Daily H&S meeting conducted regarding site activities.

.

MATERIALS DELIVERED (Amount, Condition, and Purpose):

Eight loads of gravel delivered to the site. Five loads of 1 to 3 inch gravel (approximately 84 tons) and three loads of crush and run (approximately 45 tons). The crush and run placement was necessary due to the gradient of the hill.

ISSUES AND/OR ITEMS OF DISCUSSION:

☒ **Discussion** ☐ **Minor Construction Change** ☐ **Material Design Change** ☐ **Cost or Schedule Impact**

H&S, general planning, and specific coordination with NASA personnel were discussed.

PROBLEMS/RESOLUTIONS:

Miscommunication on sub-contractor arrival. Temporary badge issued for the day.

ANALYTICAL/INSPECTION DATA (List items here and results, attach appropriate data/information):

Soil sample collected for VOCs, SVOCs, DRO, GRO, and metals from the stockpile of C. Lee. Davis, Inc. If results of analytical tests are acceptable, this stockpile material will be used for backfilling the trickling filter area.

PREPARED BY:	SIGNATURE:
Ed Mackey	E J Mackey

Daily QC Report

CONTRACT NO./ D.O. NO.:	WORK ORDER NO.	DATE
DACW33-00-D-007	03886.183.029.0300	05/10/2006

WEATHER/TEMPERATURE: Mid- 70 degrees clear.

WORK LOCATION: Old WWTP #1, Wallops Flight Facility

WESTON PERSONNEL:	APPROVED EQUIPMENT ON SITE:	VISITORS (REPRESENTING):
Ed Mackey	Bulldozer	
	Rubber Tire Backhoe	
	2 roll-offs	
SUBCONTRACTOR:	**TRADE/SERVICE:**	
IMS 6-member team	Trickling Filter Removal	

WORK COMPLETED BY WESTON Team:

Work scheduled for the day:

Set up decontamination area, delivery of first two roll-off containers and initiation of rock removal.

Work Completed Today:

Set up decontamination area, delivery of first two roll-off containers and filled both containers with approximately 15 tons of stone per roll-off from Zone 2. Roll-offs were lined with plastic liner prior to placement of rock. A Lumex was used to screen rock prior to placement into each roll-off. The action level utilized was based on current toxicological information, Agency for Toxic Substances and Disease Registry (ATSDR) recommendations, and on the technical practicalities involved in cleanup of elemental (metallic) mercury releases and inorganic mercury in soils. The action level of 1,000 nanograms per cubic meter (ng/m^3) was chosen, which coincides with the residential cleanup level in air of 1,000 ng/m^3 and is based on the most conservative ATSDR document titled, Suggested Action Levels for Indoor Mercury Vapors in Homes or Businesses with Indoor Gas Regulators. Some rock from near the area of the release (approximately 5 feet), had readings above 1,000 ng/m^3. This rock was not placed in the roll-off, and was placed back in the trickling filter Zone 2 area to allow volatilization to occur prior to re-screening.

Work Scheduled for Tomorrow:

Delivery of three roll-off containers and continuation of rock removal.

HEALTH AND SAFETY:

Daily H&S meeting conducted regarding site activities. .

MATERIALS DELIVERED (Amount, Condition, and Purpose):

Delivery of the first two roll-off containers.

ISSUES AND/OR ITEMS OF DISCUSSION:

☒ **Discussion** ☐ **Minor Construction Change** ☐ **Material Design Change** ☐ **Cost or Schedule Impact**

H&S, general planning, and specific coordination with NASA personnel were discussed.

PROBLEMS/RESOLUTIONS:

Miscommunication on sub-contractor arrival. Temporary badge issued for the morning. The backhoe did not start upon arrival. The backhoe was jump started, and a service person was called to the site to inspect the electrical system.

ANALYTICAL/INSPECTION DATA (List items here and results, attach appropriate data/information):

No samples collected.

PREPARED BY:	SIGNATURE:
Ed Mackey	E J Mackey

Daily QC Report

CONTRACT NO./ D.O. NO.:	WORK ORDER NO.	DATE
DACW33-00-D-007	03886.183.029.0300	05/11/2006

WEATHER/TEMPERATURE: Mid- 70 degrees cloudy.

WORK LOCATION: Old WWTP #1, Wallops Flight Facility

WESTON PERSONNEL:	APPROVED EQUIPMENT ON SITE:	VISITORS (REPRESENTING):
Ed Mackey	Bulldozer	
	Rubber Tire Backhoe	
	2 roll-offs	
SUBCONTRACTOR:	**TRADE/SERVICE:**	
IMS 5-member team	Trickling Filter Removal	

WORK COMPLETED BY WESTON Team:

Work scheduled for the day:

Delivery of three roll-off containers and continuation of rock removal.

Work Completed Today:

Delivery of three roll-off containers (3 through 5). Filled three containers with approximately 15 tons of stone per roll-off from Zone 2. Roll-offs were lined with plastic liner prior to placement of rock. A Lumex was used to screen rock prior to placement into each roll-off. The action level utilized was 1,000 ng/m^3 . The total stone volume for the day was approximately 45 tons. Total removed to date is approximately 75 tons.

Work Scheduled for Tomorrow:

Delivery of two roll-off containers and continuation of rock removal.

HEALTH AND SAFETY:

Daily H&S meeting conducted regarding site activities. .

MATERIALS DELIVERED (Amount, Condition, and Purpose):

Delivery of three roll-off containers.

ISSUES AND/OR ITEMS OF DISCUSSION:

☒ **Discussion** ☐ **Minor Construction Change** ☐ **Material Design Change** ☐ **Cost or Schedule Impact**

H&S, general planning, and specific coordination with NASA personnel were discussed.

PROBLEMS/RESOLUTIONS:

No problems were encountered.

ANALYTICAL/INSPECTION DATA (List items here and results, attach appropriate data/information):

No samples collected.

PREPARED BY:	SIGNATURE:
Ed Mackey	E J Mackey

Daily QC Report

CONTRACT NO./ D.O. NO.: DACW33-00-D-007	WORK ORDER NO. 03886.183.029.0300	DATE 05/12/2006

WEATHER/TEMPERATURE: Mid- 70 degrees, partly cloudy. Overnight, had high winds and rain.

WORK LOCATION: Old WWTP #1, Wallops Flight Facility

WESTON PERSONNEL:	APPROVED EQUIPMENT ON SITE:	VISITORS (REPRESENTING):
Ed Mackey	Bulldozer	
	Rubber Tire Backhoe	
	8 roll-offs	
SUBCONTRACTOR:	**TRADE/SERVICE:**	
IMS 4-member team	Trickling Filter Removal	

WORK COMPLETED BY WESTON Team:

Work scheduled for the day:

Delivery of three roll-off containers and continuation of rock removal.

Work Completed Today:

Delivery of three roll-off containers (6 through 9). Filled one container with approximately 15 tons of stone from Zone 2. Roll-off number 7 partially filled with rock from Zone 1. Roll-offs were lined with plastic liner prior to placement of rock. A Lumex was used to screen rock prior to placement into each roll-off. The action level utilized was 1,000 ng/m^3 . The total stone volume for the day was approximately 20 tons. Total removed to date is approximately 95 tons. Zone 1 rock exhibited Lumex readings of approximately 10,000 ng/m^3. Therefore, this rock was mixed by the backhoe and spread out in Zone 2 to aerate over the weekend. Additionally, rock was hand sorted in Zone 1 directly below the mercury valve area. Elemental mercury was vacuumed and placed in the 85 gallon over-pack drum. The rock, which had some amalgamated mercury attached, was placed in a lined 55-gallon drum, and will be sent off site as hazardous waste. A decision was also made to defer the WWTP sediment sample to the SI investigation. Weston and USACE can not determine the outflow location at this time. After brush has been cleared, this location should be more apparent.

Work Scheduled for Tomorrow:

Pick up and staging of one roll-off container, continuation of rock removal from Zone 1, and additional hand sorting of rock from the area below the mercury drain valve..

HEALTH AND SAFETY:

Daily H&S meeting conducted regarding site activities. .

MATERIALS DELIVERED (Amount, Condition, and Purpose):

Delivery of three roll-off containers.

ISSUES AND/OR ITEMS OF DISCUSSION:

☒ **Discussion** ☐ **Minor Construction Change** ☐ **Material Design Change** ☐ **Cost or Schedule Impact**

H&S, general planning, and specific coordination with NASA personnel were discussed.

PROBLEMS/RESOLUTIONS:

No problems were encountered.

ANALYTICAL/INSPECTION DATA (List items here and results, attach appropriate data/information):

No samples collected.

PREPARED BY:	SIGNATURE:
Ed Mackey	S/ Mackey

Daily Work Sheet

CONTRACT NO./ D.O. NO.:	WORK ORDER NO.	DATE:
DACW33-00-D-007	03886.183.029.0300	5/15/06

WEATHER/TEMPERATURE: Low 70's, partly cloudy, breezy

WORK LOCATION:
Old WWTP #1, Wallops Flight Facility

WESTON PERSONNEL:	APPROVED EQUIPMENT ON SITE:	VISITORS (REPRESENTING):
Greg Ford	Backhoe, backhoe with jack hammer, bulldozer, 8 roll-off dumpsters	

SUBCONTRACTOR:	TRADE/SERVICE:
IMS 5 man crew	Trickling filter removal

WORK COMPLETED BY WESTON TEAM:

Work scheduled for the day: Stone removal from filter area

Work Completed Today:
All exposed rock from Zone 2 was placed in lined roll off #7. Total volume is estimated at 20 tons. Approximately 1 and ½ 55-gallon drums were filled with rock and sludge from Zone 1. Pools of elemental Mercury were vacuumed and containerized before placement in the 55-gallon drums.

Work scheduled for tomorrow:
Roll off #7 will be staged and roll-off #8 will be brought down to the filter area. Rock from Zone 1 will be removed, sludge and rock within the trough will be hand sorted and/or shoveled. Any visible mercury will be vacuumed.

HEALTH AND SAFETY:

MATERIALS DELIVERED (Amount, Condition, and Purpose):

ISSUES AND/OR ITEMS OF DISCUSSION:

☐ Discussion ☐ Minor Construction Change ☐ Material Design Change ☐ Cost or Schedule Impact

PROBLEMS/RESOLUTIONS:

ANALYTICAL/INSPECTION DATA (List items here and results, attach appropriate data/information): N/A

PREPARED BY:	SIGNATURE:
Greg Ford	

Daily Work Sheet

CONTRACT NO./ D.O. NO.:	WORK ORDER NO.	DATE:
DACW33-00-D-007	03886.183.029.0300	5/16/06

WEATHER/TEMPERATURE: Low 70's, mostly sunny, breezy

WORK LOCATION:
Old WWTP #1, Wallops Flight Facility

WESTON PERSONNEL:	APPROVED EQUIPMENT ON SITE:	VISITORS (REPRESENTING):
Greg Ford	Backhoe, backhoe with jack hammer, bulldozer, 8 roll-off dumpsters	Steve Grogan, IMS

SUBCONTRACTOR:	TRADE/SERVICE:
IMS 4 man crew	Trickling filter removal

WORK COMPLETED BY WESTON TEAM:

Work scheduled for the day: Stone removal from filter area

Work Completed Today:

All remaining rock from Zone 1 was hand sorted, Lumex screened, and placed in roll-off #7 or in 55-gallon drums. Rocks and sludge within the trickling filter trench were placed in 55-gallon drums. Visible mercury was vacuumed and containerized in sealed jars. Concrete grates covering the trickling filter trench were sprinkled with Mersorb powder and scrubbed prior to placement in roll-off #8. Total volume now in roll-off #7 is estimated at 20-25 tons. Approximately 3 and ½ 55-gallon drums were filled with rock and sludge from Zone 1. Total elemental mercury containerized is estimated at 5-7 pounds.

Work scheduled for tomorrow:

The entire inner surface area of the trickling filter will be sprinkled with Mersorb powder and scrubbed. Any residue from scrubbing activities will be containerized. Pedestal removal operations will begin. Waste characterization sampling is scheduled to take place in the afternoon.

HEALTH AND SAFETY: Tailgate meeting at 7:20

MATERIALS DELIVERED (Amount, Condition, and Purpose):

ISSUES AND/OR ITEMS OF DISCUSSION:

☐ Discussion ☐ Minor Construction Change ☐ Material Design Change ☐ Cost or Schedule Impact

PROBLEMS/RESOLUTIONS:

ANALYTICAL/INSPECTION DATA (List items here and results, attach appropriate data/information): N/A

PREPARED BY:
Greg Ford

SIGNATURE:

Daily Work Sheet

CONTRACT NO./ D.O. NO.:	WORK ORDER NO.	DATE: 5/17/06
DACW33-00-D-007	03886.183.029.0300	

WEATHER/TEMPERATURE: Mid 70's, mostly sunny, breezy

WORK LOCATION:
Old WWTP #1, Wallops Flight Facility

WESTON PERSONNEL:	APPROVED EQUIPMENT ON SITE:	VISITORS (REPRESENTING):
Greg Ford	Backhoe, backhoe with jack hammer, bulldozer, 8 roll-off dumpsters	Patrick Goodblood, USACE

SUBCONTRACTOR:	TRADE/SERVICE:
IMS 5 man crew	Trickling filter removal

WORK COMPLETED BY WESTON TEAM:

Work scheduled for the day: Pedestal arm and base removal, demolition of trickling filter concrete, sampling

Work Completed Today:

Final cleaning of the interior surface areas of the trickling filter took place today. Surfaces were sprayed with water then sprinkled with Mersorb powder and scrubbed with bristle brushes. Sediment from the southern wet well of the filter was sampled then the remaining material was containerized in a 55-gallon drum. Chip samples of filter concrete were collected from 6 locations. The pedestal arm of the filter was then detached from the pier and placed in an oversized drum. The pier was then demolished. Demolition of the main filter bed concrete then began.

Work scheduled for tomorrow:

Concrete demolition and removal will continue. Sediment and water samples will be collected.

HEALTH AND SAFETY: Tailgate meeting at 7:10

MATERIALS DELIVERED (Amount, Condition, and Purpose):

ISSUES AND/OR ITEMS OF DISCUSSION:

☐ Discussion ☐ Minor Construction Change ☐ Material Design Change ☐ Cost or Schedule Impact

PROBLEMS/RESOLUTIONS:

ANALYTICAL/INSPECTION DATA (List items here and results, attach appropriate data/information): N/A

PREPARED BY:	SIGNATURE:
Greg Ford	

Daily Work Sheet

CONTRACT NO./ D.O. NO.:	WORK ORDER NO.	DATE: 5/18/06
DACW33-00-D-007	03886.183.029.0300	

WEATHER/TEMPERATURE: Mid 70's, mostly sunny, high winds

WORK LOCATION:
Old WWTP #1, Wallops Flight Facility

WESTON PERSONNEL:	APPROVED EQUIPMENT ON SITE:	VISITORS (REPRESENTING):
Greg Ford	Backhoe, backhoe with jack hammer, bulldozer, 10 roll-off dumpsters	

SUBCONTRACTOR:	TRADE/SERVICE:
IMS 4 man crew	Trickling filter removal

WORK COMPLETED BY WESTON TEAM:

Work scheduled for the day: Trickling filter concrete demolition and removal, sampling.

Work Completed Today:

Concrete demolition and removal continued. All 55-gallon drums were sampled and tentatively labeled as "Hazardous Materials" pending analysis. Roll-off dumpsters containing any material were labeled as "pending analysis." Estimated concrete removed thus far is 15 tons, representing 70% completion. Excavation was covered at the end of the day.

Work scheduled for tomorrow:

Concrete demolition and removal will continue. A soil sample will be collected from fill material beneath the southern wet well.

HEALTH AND SAFETY: Tailgate meeting at 7:10

MATERIALS DELIVERED (Amount, Condition, and Purpose):

Roll-offs 9 and 10.

ISSUES AND/OR ITEMS OF DISCUSSION:

☐ Discussion ☐ Minor Construction Change ☐ Material Design Change ☐ Cost or Schedule Impact

PROBLEMS/RESOLUTIONS:

ANALYTICAL/INSPECTION DATA (List items here and results, attach appropriate data/information): N/A

PREPARED BY:	SIGNATURE:
Greg Ford	

Daily Work Sheet

CONTRACT NO./ D.O. NO.:	WORK ORDER NO.	DATE:
DACW33-00-D-007	03886.183.029.0300	5/19/06

WEATHER/TEMPERATURE: Low 70's, overcast, high winds

WORK LOCATION:
Old WWTP #1, Wallops Flight Facility

WESTON PERSONNEL:	APPROVED EQUIPMENT ON SITE:	VISITORS (REPRESENTING):
Greg Ford	Backhoe, backhoe with jack hammer, bulldozer, 10 roll-off dumpsters	

SUBCONTRACTOR:	TRADE/SERVICE:
IMS 4 man crew	Trickling filter removal

WORK COMPLETED BY WESTON TEAM:

Work scheduled for the day: Trickling filter concrete demolition and removal, sampling.

Work Completed Today:

Concrete demolition and removal continued and was completed today. A soil sample was collected from beneath the south wet well for TCLP analysis. The floor opening in the Pump House was covered with plywood which was marked with the word "HOLE" in orange spray paint. Orange snow fence was then tacked to the door frame to prevent entry into the Pump House. The excavation was covered with filter fabric then with poly sheeting. All tarps on the roll-off dumpsters were retied securely. Green metal fencing and orange snow fence were put in place to block access to the site.

Final estimate of liquid elemental mercury collected is 7 pounds. This estimate does not include amalgamated mercury adhering to filter stone and concrete in the vicinity of the pedestal. Estimated concrete removed is 25 tons. Estimated filter stone removed and placed in roll-off dumpsters during project is 120 tons. The most contaminated filter stone, concrete, and cleaning debris were containerized in 8 55-gallon drums. The pedestal arm, vacuumed and containerized liquid mercury, and poly sheeting used during pedestal arm removal were placed in an 85-gallon overpack drum.

Next phase of work scheduled:

Wastes will be hauled off site as hazardous or non-hazardous wastes according to analytical results.

HEALTH AND SAFETY: Tailgate meeting at 7:10

MATERIALS DELIVERED (Amount, Condition, and Purpose):

ISSUES AND/OR ITEMS OF DISCUSSION:

☐ Discussion ☐ Minor Construction Change ☐ Material Design Change ☐ Cost or Schedule Impact

PROBLEMS/RESOLUTIONS:

ANALYTICAL/INSPECTION DATA (List items here and results, attach appropriate data/information): N/A

PREPARED BY:	SIGNATURE:
Greg Ford	

APPENDIX C

PHOTOGRAPHIC LOG

PHOTOGRAPHY LOG SHEET
Old Wastewater Treatment Plant Site Time Critical Removal Action
Wallops Flight Facility, Main Base ● Accomack County, VA

SCENE: Construction of temporary access road. Pump house (cinder block building) and rotating arms of the trickling filter located on the right (east) side of photograph. Photograph taken facing northeast.
PHOTO NUMBER: WFF1-TCRA-050806-01 **DATE:** May 8, 2006 **PHOTOGRAPHY BY:** Ed Mackey

SCENE: Upper steel pedestal and rotating arms of the trickling filter; the mercury seal portion of the rotary distributor is covered/wrapped in poly sheeting. Portion of concrete settling tank located in background. Photograph taken facing east.
PHOTO NUMBER: WFF1-TCRA-050806-02 **DATE:** May 8, 2006 **PHOTOGRAPHY BY:** Ed Mackey

PHOTOGRAPHY LOG SHEET
Old Wastewater Treatment Plant Site Time Critical Removal Action
Wallops Flight Facility, Main Base ● Accomack County, VA

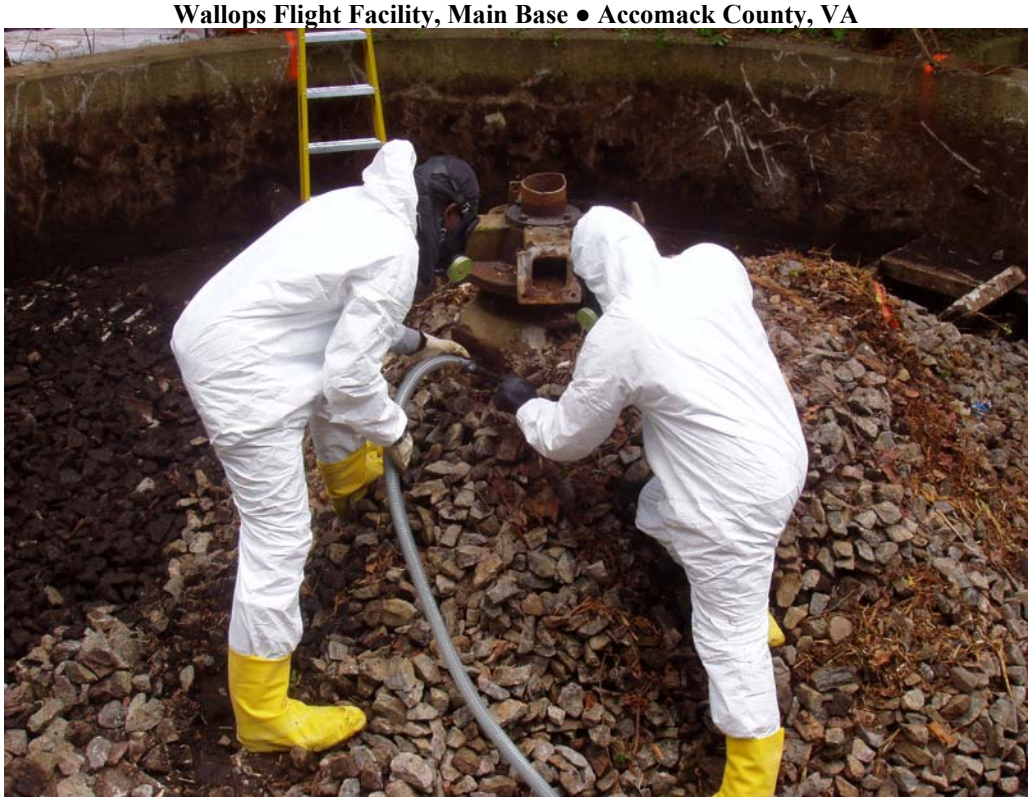
SCENE: Cutting/re-grading hillside as part of construction of temporary access road. Photograph taken facing south.
PHOTO NUMBER: WFF1-TCRA-050806-04 **DATE:** May 8, 2006 **PHOTOGRAPHY BY:** Ed Mackey

SCENE: Spreading gravel and laying geotextile fabric as part of construction of temporary access road. Photograph taken facing south.
PHOTO NUMBER: WFF1-TCRA-050906-02 **DATE:** May 9, 2006 **PHOTOGRAPHY BY:** Ed Mackey

PHOTOGRAPHY LOG SHEET
Old Wastewater Treatment Plant Site Time Critical Removal Action
Wallops Flight Facility, Main Base ● Accomack County, VA

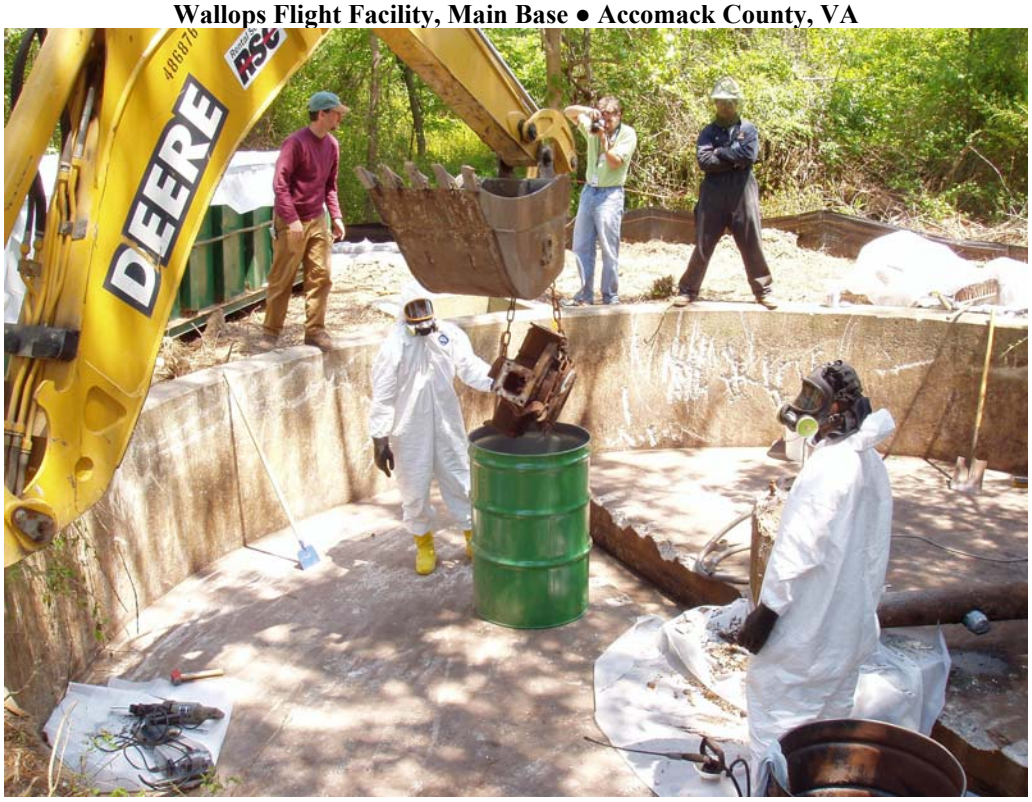
SCENE: Completed gravel/crush n' run temporary access road. Photograph taken facing south.
PHOTO NUMBER: WFF1-TCRA-050906-03 **DATE:** May 9, 2006 **PHOTOGRAPHY BY:** Ed Mackey

SCENE: Inspecting and screening bucket of trickling filter stone media from Zone 2 with portable mercury vapor analyzer. Zone 1 and Zone 2 delineated by orange paint line. Portion of northern wet well in foreground, and pump house building in background. Photograph taken facing south-southwest.
PHOTO NUMBER: WFF1-TCRA-051006-02 **DATE:** May 10, 2006 **PHOTOGRAPHY BY:** Ed Mackey



SCENE: Vacuuming liquid mercury from around the center pedestal and the mercury seal portion of the rotary distributor in the trickling filter tank. Photograph taken facing southeast.
PHOTO NUMBER: WFF1-TCRA-051206-02 **DATE:** May 12, 2006 **PHOTOGRAPHY BY:** Ed Mackey

SCENE: Vacuuming pool of liquid mercury at the base of the center pedestal in the trickling filter tank. Photograph taken facing east.
PHOTO NUMBER: WFF1-TCRA-051506-02 **DATE:** May 15, 2006 **PHOTOGRAPHY BY:** Greg Ford



SCENE: Placement of the mercury seal portion of the rotary distributor in 85-gallon drum. Photograph taken facing northeast.
PHOTO NUMBER: WFF1-TCRA-051706-01 **DATE:** May 17, 2006 **PHOTOGRAPHY BY:** Greg Ford

SCENE: Demolition of trickling filter tank. Photograph taken facing southwest.
PHOTO NUMBER: WFF1-TCRA-051806-01 **DATE:** May 18, 2006 **PHOTOGRAPHY BY:** Greg Ford

PHOTOGRAPHY LOG SHEET
Old Wastewater Treatment Plant Site Time Critical Removal Action
Wallops Flight Facility, Main Base ● Accomack County, VA

SCENE: Site restoration. Concrete settling tank and cinder-block pump house building located in background. Photograph taken facing southeast.
PHOTO NUMBER: WFF1-TCRA-060106-01 **DATE:** June 01, 2006 **PHOTOGRAPHY BY:** Ed Mackey

SCENE: Site restoration. Cinder-block pump house building located on east (right) side of photograph. Photograph taken facing northeast.
PHOTO NUMBER: WFF1-TCRA-060106-02 **DATE:** June 01, 2006 **PHOTOGRAPHY BY:** Ed Mackey

PHOTOGRAPHY LOG SHEET
Old Wastewater Treatment Plant Site Time Critical Removal Action
Wallops Flight Facility, Main Base ● Accomack County, VA

SCENE: Metal fence and nigh visibility fence restricting access to site and temporary gravel access road. Photograph taken from the taxiway that parallels runway 10-28; facing east.
PHOTO NUMBER: WFF1-TCRA-051906-04 **DATE:** May 19, 2006 **PHOTOGRAPHY BY:** Greg Ford

SCENE: Covered roll-off containers staged along the taxiway that parallels runway 10-28. Photograph taken facing northwest.
PHOTO NUMBER: WFF1-TCRA-051906-05 **DATE:** May 19, 2006 **PHOTOGRAPHY BY:** Greg Ford

APPENDIX D

LABORATORY ANALYTICAL REPORTS

APPENDIX D.1

ANALYTICAL REPORT FOR 605062

Sample(s): WFF-TCRA-BKG

Analytical Report For 605062

for

Weston Solutions, Inc

Project Manager: Ed Mackey

Project Name: Wallops

GPL

Laboratories

GPL Laboratories, LLLP certifies that the test results meet all requirements of the NELAC Standards unless otherwise noted.

Reviewed By,
Project Manager

Approved By,
Laboratory Director

The Case Narrative, Chain of Custody, Sample Receipt Checklist, and the cover page of the Sample Analysis Report, are integral parts of GPL Laboratories' report package. If you did not receive all of these documents, please contact GPL immediately.

Sample Receipt

One soil sample was received on 05/10/2006. The samples were delivered by Federal Express. Sample receipt conditions and temperatures are documented on the Sample Receipt checklist.

Sample Analysis

Samples were prepared and analyzed by GPL using the analytical methodologies indicated on the Sample Analysis Summary Report. In some chromatographic analyses, manual integration is used instead of automated integration because it produces more accurate results. All manual integrations are denoted on the sample quantitation report. Analysis results and limits for soil are reported on a dry weight basis unless otherwise specified on the report.

Volatiles

One soil sample was analyzed for volatile organic compounds using SW846 method 8260B.

Sample was analyzed within holding time.

Surrogate recoveries were within QC limits.

Matrix spike and matrix spike analyses were performed on same sample. Several spike recoveries and RPD were outside QC limits.

A laboratory control sample report was analyzed along with the samples batch. One spike recovery was outside QC limits.

Manual integration was performed on some peaks that were improperly integrated by the software. The manually integrated compounds are designated by an "m" next to the area of the quantitation report, and chromatograms for these compounds were submitted with the package.

Semivolatiles

One soil sample was extracted using SW846 method 3550B. This sample was analyzed for semi-volatile organic compounds using method 8270C.

Extraction and analysis holding times were met.

Surrogate recoveries for all samples were within QC limits.

QC was shared with work order # 605028. Matrix spike and matrix spike duplicate sample analyses for the shared MS/MSD were performed on sample M26SME1301. Matrix spike recoveries were within QC limits.

A laboratory control sample was extracted and analyzed along with this batch. Spike recoveries were within QC limits

Total Petroleum Hydrocarbons

One soil sample was extracted and analyzed for Diesel Range Organics (DRO) using SW846 method 8015.

All surrogate recoveries were within QC limits.

Matrix spike and matrix spike duplicate analyses was performed on sample WFF-TCRA-BKG. The spike recovery for MS was slightly below QC limits.

TPH-GRO

One soil sample was analyzed for Gasoline Range Organics (GRO) using SW846 method 8015.

Sample was analyzed within holding time.

Matrix spike and matrix spike duplicate analyses were performed on sample WFF-TCRA-BKG. Spike recoveries were within QC limits.

A laboratory control sample report was analyzed along with the batch. Spike recovery was within QC limits.

Manual integration was performed on some peaks that were improperly integrated by the software. The manually integrated compounds are designated by an "m" next to the area of the quantitation report, and chromatograms for these compounds were submitted with the package.

Metals

One soil sample was analyzed for HSL metals by SW846 6010B methods.

A matrix spike, matrix spike duplicate and serial dilution were performed on the batch sample 605065-001 for all required ICP analytes. The matrix spike was outside of the control limits for antimony and chromium; matrix spike duplicate was outside of the control limits for antimony; all associated data were flagged with an "N". A post digestion analytical spike was performed with a recovery of 102% for antimony. A post digestion analytical spike failed for chromium. No control limits were applied to the matrix spike for aluminum, iron, and magnesium; matrix spike duplicate for aluminum and magnesium due to an insignificant spike addition.

A matrix spike and matrix spike duplicate were performed on the batch sample 605077-007 for mercury. They were within the control limits.

Calibration standards are verified against independent check standards purchased from a commercial vendor of environmental standards.

All GPL QA/QC criteria were met with the exceptions of those mentioned above.

Pat Hubschman

Reviewed By,
Project Manager

Approved By,
Laboratory Director

GPL Laboratories, LLLP

Sample Summary Report

Weston Solutions, Inc

Work Order: 605062

Client Sample ID	Lab Sample ID	Analytical Method	Matrix	Date Sampled	Date Recieved
WFF-TCRA-BKG	605062-001-004-1/2	SW8015GRO	SOIL	05/09/2006	05/10/2006
	605062-001-001-1/1	SW8015DRO			
	605062-001-001-1/1	SW8270C			
	605062-001-002-1/2	SW6010B			
	605062-001-002-1/2	SW7471A			
	605062-001-002-1/2	CLP_SOLIDS			
WFF-TCRA-BKG	605062-001-004-1/2	SW8260B	SOIL	05/09/2006	05/10/2006

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFF-TCRA-BKG	Lab Sample ID:	605062-001-001-1/1
Sample Date/Time:	05/09/2006 11:40	Percent Moisture:	5.48
Receipt Date/Time:	05/10/2006 10:34	Preparation Method:	SW3550
Prepared Date/Time:	05/10/2006 00:00	Analytical Method:	SW8015DRO

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	**TPH-DRO (Diesel Range Organics)**	**6.6**		**1.8**	**1**	**mg/kg**	**05/11/06**	**12:30**

#	Surrogate Parameter	Percent Recovery	Control Limits	Dil Fact	Analysis Date/Time	
2)	p-Terphenyl	59 %	58 - 130	1	05/11/06	12:30

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFF-TCRA-BKG	Lab Sample ID:	605062-001-001-1/1
Sample Date/Time:	05/09/2006 11:40	Percent Moisture:	5.48
Receipt Date/Time:	05/10/2006 10:34	Preparation Method:	SW3550
Prepared Date/Time:	05/10/2006 00:00	Analytical Method:	SW8270C

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	1,1- Biphenyl	BQL	U	350	1	ug/kg	05/11/06	09:06
2)	2,2-Oxybis(1-Chloropropane)	BQL	U	350	1	ug/kg	05/11/06	09:06
3)	2,4,5-Trichlorophenol	BQL	U	350	1	ug/kg	05/11/06	09:06
4)	2,4,6-Trichlorophenol	BQL	U	350	1	ug/kg	05/11/06	09:06
5)	2,4-Dichlorophenol	BQL	U	350	1	ug/kg	05/11/06	09:06
6)	2,4-Dimethylphenol	BQL	U	350	1	ug/kg	05/11/06	09:06
7)	2,4-Dinitrophenol	BQL	U	710	1	ug/kg	05/11/06	09:06
8)	2,4-Dinitrotoluene	BQL	U	350	1	ug/kg	05/11/06	09:06
9)	2,6-Dinitrotoluene	BQL	U	350	1	ug/kg	05/11/06	09:06
10)	2-Chloronaphthalene	BQL	U	350	1	ug/kg	05/11/06	09:06
11)	2-Chlorophenol	BQL	U	350	1	ug/kg	05/11/06	09:06
12)	2-Methylnaphthalene	BQL	U	350	1	ug/kg	05/11/06	09:06
13)	2-Nitroaniline	BQL	U	350	1	ug/kg	05/11/06	09:06
14)	2-Nitrophenol	BQL	U	350	1	ug/kg	05/11/06	09:06
15)	2-methylphenol	BQL	U	350	1	ug/kg	05/11/06	09:06
16)	3,3-Dichlorobenzidine	BQL	U	710	1	ug/kg	05/11/06	09:06
17)	3-Nitroaniline	BQL	U	350	1	ug/kg	05/11/06	09:06
18)	4,6-dinitro-2-methyl phenol	BQL	U	710	1	ug/kg	05/11/06	09:06
19)	4-Bromophenyl-phenylether	BQL	U	350	1	ug/kg	05/11/06	09:06
20)	4-Chloroaniline	BQL	U	350	1	ug/kg	05/11/06	09:06
21)	4-Chlorophenyl Phenyl Ether	BQL	U	350	1	ug/kg	05/11/06	09:06
22)	4-Nitroaniline	BQL	U	350	1	ug/kg	05/11/06	09:06
23)	4-Nitrophenol	BQL	U	710	1	ug/kg	05/11/06	09:06
24)	4-chloro-3-methylphenol	BQL	U	350	1	ug/kg	05/11/06	09:06
25)	4-methylphenol	BQL	U	350	1	ug/kg	05/11/06	09:06
26)	Acenaphthene	BQL	U	350	1	ug/kg	05/11/06	09:06
27)	Acenaphthylene	BQL	U	350	1	ug/kg	05/11/06	09:06
28)	Acetophenone	BQL	U	350	1	ug/kg	05/11/06	09:06

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFF-TCRA-BKG	Lab Sample ID:	605062-001-001-1/1
Sample Date/Time:	05/09/2006 11:40	Percent Moisture:	5.48
Receipt Date/Time:	05/10/2006 10:34	Preparation Method:	SW3550
Prepared Date/Time:	05/10/2006 00:00	Analytical Method:	SW8270C

29) Anthracene	BQL	U	350	1	ug/kg	05/11/06	09:06
30) Atrazine	BQL	U	350	1	ug/kg	05/11/06	09:06
31) Benzaldehyde	BQL	U	350	1	ug/kg	05/11/06	09:06
32) Benzo(a)anthracene	BQL	U	350	1	ug/kg	05/11/06	09:06
33) Benzo(a)pyrene	BQL	U	350	1	ug/kg	05/11/06	09:06
34) Benzo(b)fluoranthene	BQL	U	350	1	ug/kg	05/11/06	09:06
35) Benzo(g,h,i)perylene	BQL	U	350	1	ug/kg	05/11/06	09:06
36) Benzo(k)fluoranthene	BQL	U	350	1	ug/kg	05/11/06	09:06
37) Benzyl Butyl Phthalate	BQL	U	350	1	ug/kg	05/11/06	09:06
38) Caprolactam	BQL	U	350	1	ug/kg	05/11/06	09:06
39) Carbazole	BQL	U	350	1	ug/kg	05/11/06	09:06
40) Chrysene	BQL	U	350	1	ug/kg	05/11/06	09:06
41) Dibenz(a,h)Anthracene	BQL	U	350	1	ug/kg	05/11/06	09:06
42) Dibenzofuran	BQL	U	350	1	ug/kg	05/11/06	09:06
43) Diethyl Phthalate	BQL	U	350	1	ug/kg	05/11/06	09:06
44) Dimethyl Phthalate	BQL	U	350	1	ug/kg	05/11/06	09:06
45) Fluoranthene	BQL	U	350	1	ug/kg	05/11/06	09:06
46) Fluorene	BQL	U	350	1	ug/kg	05/11/06	09:06
47) Hexachlorobenzene	BQL	U	350	1	ug/kg	05/11/06	09:06
48) Hexachlorobutadiene	BQL	U	350	1	ug/kg	05/11/06	09:06
49) Hexachlorocyclopentadiene	BQL	U	350	1	ug/kg	05/11/06	09:06
50) Hexachloroethane	BQL	U	350	1	ug/kg	05/11/06	09:06
51) Indeno(1,2,3-c,d)Pyrene	BQL	U	350	1	ug/kg	05/11/06	09:06
52) Isophorone	BQL	U	350	1	ug/kg	05/11/06	09:06
53) Naphthalene	BQL	U	350	1	ug/kg	05/11/06	09:06
54) Nitrobenzene	BQL	U	350	1	ug/kg	05/11/06	09:06
55) Pentachlorophenol	BQL	U	710	1	ug/kg	05/11/06	09:06
56) Phenanthrene	BQL	U	350	1	ug/kg	05/11/06	09:06
57) Phenol	BQL	U	350	1	ug/kg	05/11/06	09:06
58) Pyrene	BQL	U	350	1	ug/kg	05/11/06	09:06

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFF-TCRA-BKG	Lab Sample ID:	605062-001-001-1/1
Sample Date/Time:	05/09/2006 11:40	Percent Moisture:	5.48
Receipt Date/Time:	05/10/2006 10:34	Preparation Method:	SW3550
Prepared Date/Time:	05/10/2006 00:00	Analytical Method:	SW8270C

59) bis(2-chloroethoxy) methane	BQL	U	350	1	ug/kg	05/11/06	09:06
60) bis(2-chloroethyl) ether	BQL	U	350	1	ug/kg	05/11/06	09:06
61) bis(2-ethylhexyl) phthalate	BQL	U	350	1	ug/kg	05/11/06	09:06
62) di-n-Butyl Phthalate	BQL	U	350	1	ug/kg	05/11/06	09:06
63) di-n-Octyl Phthalate	BQL	U	350	1	ug/kg	05/11/06	09:06
64) n-Nitrosodi-n-Propylamine	BQL	U	350	1	ug/kg	05/11/06	09:06
65) n-Nitrosodiphenylamine	BQL	U	350	1	ug/kg	05/11/06	09:06

# Surrogate Parameter	Percent Recovery	Control Limits	Dil Fact	Analysis Date/Time	
66) 2,4,6-Tribromophenol	105 %	35 - 125	1	05/11/06	09:06
67) 2-Fluorobiphenyl	85 %	45 - 105	1	05/11/06	09:06
68) 2-Fluorophenol	76 %	35 - 105	1	05/11/06	09:06
69) Nitrobenzene-d5	83 %	35 - 100	1	05/11/06	09:06
70) Phenol-d5	83 %	40 - 100	1	05/11/06	09:06
71) p-Terphenyl-d14	95 %	30 - 125	1	05/11/06	09:06

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFF-TCRA-BKG	Lab Sample ID:	605062-001-002-1/2
Sample Date/Time:	05/09/2006 11:40	Percent Moisture:	5.48
Receipt Date/Time:	05/10/2006 10:34	Preparation Method:	SW3050B
Prepared Date/Time:	05/11/2006 00:00	Analytical Method:	SW6010B

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	**Aluminum**	**2010**		**15.7**	**1**	**mg/kg**	**05/11/06**	**20:16**
2)	Antimony	BQL	UN	1.6	1	mg/kg	05/11/06	20:16
3)	Arsenic	BQL	U	1.6	1	mg/kg	05/11/06	20:16
4)	**Barium**	**3.5**		**0.39**	**1**	**mg/kg**	**05/11/06**	**20:16**
5)	Beryllium	0.047	J	0.16	1	mg/kg	05/11/06	20:16
6)	Cadmium	0.030	J	0.47	1	mg/kg	05/11/06	20:16
7)	**Calcium**	**89.0**		**78.4**	**1**	**mg/kg**	**05/11/06**	**20:16**
8)	**Chromium**	**2.5**	**N**	**0.39**	**1**	**mg/kg**	**05/11/06**	**20:16**
9)	Cobalt	0.30	J	0.39	1	mg/kg	05/11/06	20:16
10)	Copper	0.42	J	0.78	1	mg/kg	05/11/06	20:16
11)	**Iron**	**921**		**11.8**	**1**	**mg/kg**	**05/11/06**	**20:16**
12)	**Lead**	**0.80**		**0.78**	**1**	**mg/kg**	**05/11/06**	**20:16**
13)	**Magnesium**	**154**		**19.6**	**1**	**mg/kg**	**05/11/06**	**20:16**
14)	**Manganese**	**6.4**		**0.39**	**1**	**mg/kg**	**05/11/06**	**20:16**
15)	**Nickel**	**1.3**		**0.78**	**1**	**mg/kg**	**05/11/06**	**20:16**
16)	**Potassium**	**112**		**19.6**	**1**	**mg/kg**	**05/11/06**	**20:16**
17)	Selenium	BQL	U	1.6	1	mg/kg	05/11/06	20:16
18)	Silver	BQL	U	0.39	1	mg/kg	05/11/06	20:16
19)	Sodium	54.3	J	196	1	mg/kg	05/11/06	20:16
20)	Thallium	BQL	U	2.4	1	mg/kg	05/11/06	20:16
21)	**Vanadium**	**2.0**		**0.78**	**1**	**mg/kg**	**05/11/06**	**20:16**
22)	**Zinc**	**4.1**		**1.6**	**1**	**mg/kg**	**05/11/06**	**20:16**

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFF-TCRA-BKG	Lab Sample ID:	605062-001-002-1/2
Sample Date/Time:	05/09/2006 11:40	Percent Moisture:	5.48
Receipt Date/Time:	05/10/2006 10:34	Preparation Method:	SW7471_DIG
Prepared Date/Time:	05/15/2006 17:00	Analytical Method:	SW7471A

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time
1)	Mercury	BQL	U	0.031	1	mg/kg	05/16/06 14:50

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFF-TCRA-BKG	Lab Sample ID:	605062-001-002-1/2
Sample Date/Time:	05/09/2006 11:40	Percent Moisture:	5.48
Receipt Date/Time:	05/10/2006 10:34	Preparation Method:	NA
Prepared Date/Time:		Analytical Method:	CLP_SOLIDS

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	**Percent Solids**	**94**		**1.0**	**1**	**%**	**05/12/06**	**08:34**

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFF-TCRA-BKG	Lab Sample ID:	605062-001-004-1/2
Sample Date/Time:	05/09/2006 11:40	Percent Moisture:	5.48
Receipt Date/Time:	05/10/2006 10:34	Preparation Method:	SW5030B
Prepared Date/Time:	05/19/2006 16:25	Analytical Method:	SW8015GRO

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time
1)	TPH-GRO (Gasoline Range Organics)	BQL	U	110	1	ug/kg	05/19/06 21:11

#	Surrogate Parameter	Percent Recovery	Control Limits	Dil Fact	Analysis Date/Time
2)	4-Bromofluorobenzene	94 %	72 - 134	1	05/19/06 21:11

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFF-TCRA-BKG	Lab Sample ID:	605062-001-004-1/2
Sample Date/Time:	05/09/2006 11:40	Percent Moisture:	5.48
Receipt Date/Time:	05/10/2006 10:34	Preparation Method:	SW5030B
Prepared Date/Time:	05/12/2006 08:19	Analytical Method:	SW8260B

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	1,1,1-Trichloroethane	BQL	U	5.3	1	ug/kg	05/12/06	16:03
2)	1,1,2,2-Tetrachloroethane	BQL	U	5.3	1	ug/kg	05/12/06	16:03
3)	1,1,2-Trichloroethane	BQL	U	5.3	1	ug/kg	05/12/06	16:03
4)	1,1-Dichloroethane	BQL	U	5.3	1	ug/kg	05/12/06	16:03
5)	1,1-Dichloroethene	BQL	U	5.3	1	ug/kg	05/12/06	16:03
6)	1,2,4-Trichlorobenzene	BQL	U	5.3	1	ug/kg	05/12/06	16:03
7)	1,2-Dibromo-3-Chloropropane	BQL	U	5.3	1	ug/kg	05/12/06	16:03
8)	1,2-Dichlorobenzene	BQL	U	5.3	1	ug/kg	05/12/06	16:03
9)	1,2-Dichloroethane	BQL	U	5.3	1	ug/kg	05/12/06	16:03
10)	1,2-Dichloropropane	BQL	U	5.3	1	ug/kg	05/12/06	16:03
11)	1,3-Dichlorobenzene	BQL	U	5.3	1	ug/kg	05/12/06	16:03
12)	1,4-Dichlorobenzene	BQL	U	5.3	1	ug/kg	05/12/06	16:03
13)	2-Butanone	BQL	U	11	1	ug/kg	05/12/06	16:03
14)	2-Hexanone	BQL	U	11	1	ug/kg	05/12/06	16:03
15)	4-Methyl-2-Pentanone	BQL	U	11	1	ug/kg	05/12/06	16:03
16)	Acetone	BQL	U	11	1	ug/kg	05/12/06	16:03
17)	Benzene	BQL	U	5.3	1	ug/kg	05/12/06	16:03
18)	Bromodichloromethane	BQL	U	5.3	1	ug/kg	05/12/06	16:03
19)	Bromoform	BQL	U	5.3	1	ug/kg	05/12/06	16:03
20)	Bromomethane	BQL	U	11	1	ug/kg	05/12/06	16:03
21)	Carbon Disulfide	BQL	U	5.3	1	ug/kg	05/12/06	16:03
22)	Carbon Tetrachloride	BQL	U	5.3	1	ug/kg	05/12/06	16:03
23)	Chlorobenzene	BQL	U	5.3	1	ug/kg	05/12/06	16:03
24)	Chloroethane	BQL	U	11	1	ug/kg	05/12/06	16:03
25)	Chloroform	BQL	U	5.3	1	ug/kg	05/12/06	16:03
26)	Chloromethane	BQL	U	11	1	ug/kg	05/12/06	16:03
27)	Cyclohexane	BQL	U	5.3	1	ug/kg	05/12/06	16:03
28)	Dibromochloromethane	BQL	U	5.3	1	ug/kg	05/12/06	16:03

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFF-TCRA-BKG	Lab Sample ID:	605062-001-004-1/2
Sample Date/Time:	05/09/2006 11:40	Percent Moisture:	5.48
Receipt Date/Time:	05/10/2006 10:34	Preparation Method:	SW5030B
Prepared Date/Time:	05/12/2006 08:19	Analytical Method:	SW8260B

29) Dichlorodifluoromethane	BQL	U	5.3	1	ug/kg	05/12/06	16:03
30) Ethylbenzene	BQL	U	5.3	1	ug/kg	05/12/06	16:03
31) Ethylene Dibromide	BQL	U	5.3	1	ug/kg	05/12/06	16:03
32) Freon 113	BQL	U	5.3	1	ug/kg	05/12/06	16:03
33) Isopropylbenzene	BQL	U	5.3	1	ug/kg	05/12/06	16:03
34) Methyl Acetate	BQL	U	5.3	1	ug/kg	05/12/06	16:03
35) Methylcyclohexane	BQL	U	5.3	1	ug/kg	05/12/06	16:03
36) Methylene Chloride	BQL	U	11	1	ug/kg	05/12/06	16:03
37) Styrene	BQL	U	5.3	1	ug/kg	05/12/06	16:03
38) Tetrachloroethylene	BQL	U	5.3	1	ug/kg	05/12/06	16:03
39) Toluene	BQL	U	5.3	1	ug/kg	05/12/06	16:03
40) Trichloroethene	BQL	U	5.3	1	ug/kg	05/12/06	16:03
41) Trichlorofluoromethane	BQL	U	5.3	1	ug/kg	05/12/06	16:03
42) Vinyl Chloride	BQL	U	11	1	ug/kg	05/12/06	16:03
43) Xylenes, Total	BQL	U	5.3	1	ug/kg	05/12/06	16:03
44) cis-1,2-Dichloroethene	BQL	U	5.3	1	ug/kg	05/12/06	16:03
45) cis-1,3-Dichloropropene	BQL	U	5.3	1	ug/kg	05/12/06	16:03
46) tert-butyl methyl ether	BQL	U	5.3	1	ug/kg	05/12/06	16:03
47) trans-1,2-dichloroethene	BQL	U	5.3	1	ug/kg	05/12/06	16:03
48) trans-1,3-dichloropropene	BQL	U	5.3	1	ug/kg	05/12/06	16:03

# Surrogate Parameter	Percent Recovery	Control Limits	Dil Fact	Analysis Date/Time	
49) 1,2-Dichlorobenzene-d4	99 %	65 - 123	1	05/12/06	16:03
50) 1,2-Dichloroethane-d4	83 %	65 - 125	1	05/12/06	16:03
51) 4-Bromofluorobenzene	99 %	85 - 120	1	05/12/06	16:03
52) Toluene-D8	89 %	85 - 115	1	05/12/06	16:03

Qualifier Definitions

Weston Solutions, Inc

Work Order: 605062

All Departments

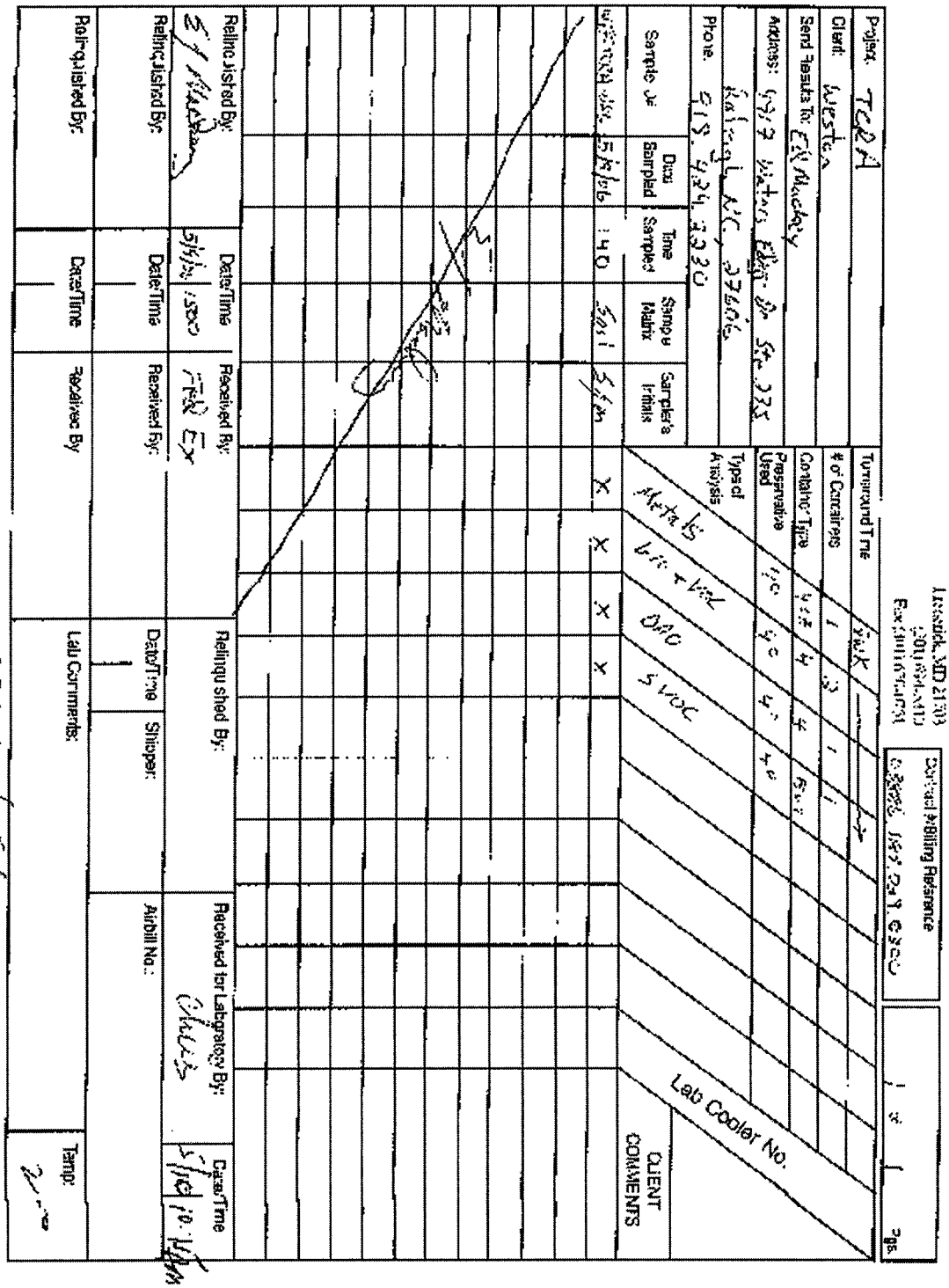
U	Indicates that the compound was analyzed for but not detected
BQL	Below Quantitation Limit

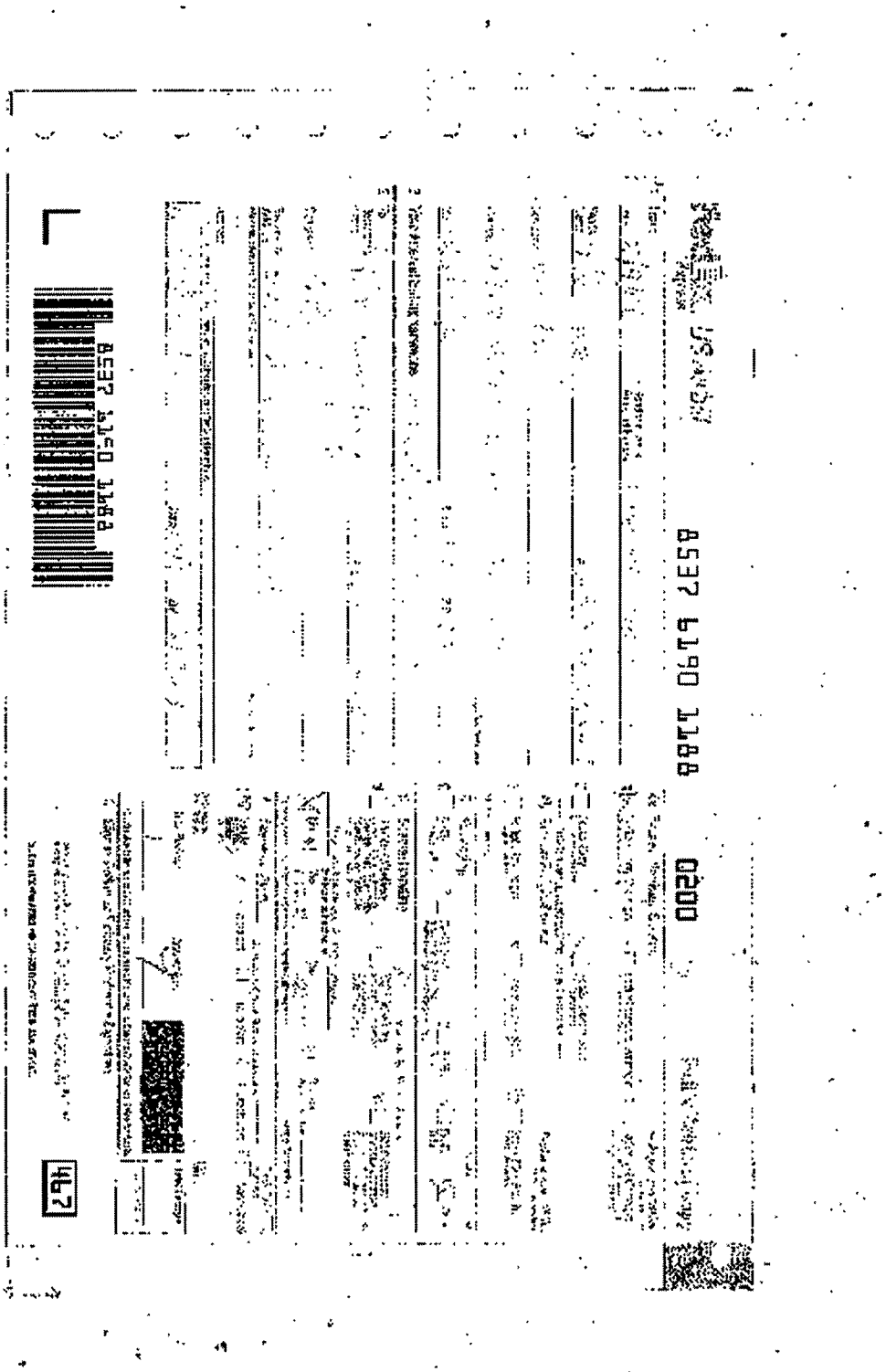
Organics

B	Indicates that the analyte was found in the associated blank as well as in the sample
D	Indicates that the analyte was reported from a diluted analysis
E	Indicates that the concentration detected exceeded the calibration range of the instrument
J	Value is less than the reporting limit but greater than the MDL
P	Indicates that there is greater than 25% difference for detected pesticide/Arochlor results between the two GC columns

Metals

J	Indicates that the reported value was less than the reporting limit but greater than or equal to the IDL/MDL
E	Indicates that the reported value is estimated because of the possible presence of interference (i.e. the serial dilution not within control limits)
H	Indicates that the element was found in the associated blank as well as in the sample and the value is greater than or equal to the reporting limit
D	Indicates that the analyte was reported from a diluted analysis
N	Spiked sample recovery not within control limits
*	Duplicate analysis not within control limits


GPL LABORATORIES, LLLP
Project:
Client:
Send Results To:
Address:
Phone:
Sample ID
Date Sampled
Time Sampled
Sample Matrix
Sampler's Initials
Turnaround Time
# of Containers
Container Type
Preservative Used
Typical Analysis
Lab Cooler No.
CLIENT COMMENTS
Relinquished By:
Date/Time
Received By:
Relinquished By:
Date/Time
Received By:
Relinquished By:
Date/Time
Received By
Relinquished By:
Date/Time
Received for Laboratory By:
Date/Time
Shipper:
Airbill No.:
Lab Comments:
Temp:
G.P.W.O.
605062



GPL Laboratories, LLLP

Figure 1
SAMPLE RECEIPT CHECKLIST

W.O. No: 605062
Client Name: Weston
Date Received: 05/10/06
Time Received: 10:11
Received By: CHRIS

Carrier Name: FEDX
Prepared (Logged In) By: MC (Initials) on 05/10/06 (Date)
Project:
Site:
VOA Holding Blank I.D. No:

	YES	NO
AirBill/Manifest Present?	✓	
No.		
Shipping Container in Good Condition?	✓	
Custody Seals Present on Shipping Container?	✓	
Condition: Broken		
Intact-not dated or signed		
Intact-dated and signed	✓	
Usage of Tamper Evident Type	✓	
Chain-of-Custody Present?	✓	
Chain-of-Custody Agrees with Sample Labels?	✓	
Chain-of-Custody Signed?	✓	
Packing Present in Shipping Container?	✓	
Type of Packing		
Custody seals on Sample Bottles?	✓	
Condition: Good		
Broken		
Total Number of Sample Bottles: 3		
Total Number of Samples: 1		
Samples Intact?	✓	
Sufficient Sample Volume for Indicated Test?	✓	

	YES	NO
Trip Blanks: No. of Sets		✓
Field Blanks: No. of Sets		✓
Equip. Blank: No. of Sets		✓
Field Duplicate: No. of Sets		✓
MS/MSD: No of Sets		✓
VOA Vials Have Zero Headspace?		
If yes, smaller or greater than a Green Pea (see comments)		
Preservatives Added to Sample?		✓
pH Check Required?		✓
Performed By?		✓
Ice Present in Shipping Container?	✓	

Container #	Temp.	Container #	Temp.
1	2.0		

Project Manager Contacted? Not
Name:
Date Contacted: 05/10/06

Any NO response must be detailed in the comments section below. If items are not applicable to particular samples or contracts, they should be marked N/A

COMMENTS:

Checklist Completed By: MC
Date: 05/10/06

SOP No: F-2V14

APPENDIX D.2

ANALYTICAL REPORT FOR 605107

Sample(s): WFF1-TCRA-TCLP-SW-01
WFF1-TCRA-SD-01
WFF1-TCRA-TCLP-F1
WFF1-TCRA-TCLP-F2
WFF1-TCRA-TCLP-PED
WFF1-TCRA-TCLP-DR1-6
WFF1-TCRA-TCLP-DR7
WFF1-TCRA-TCLP-SD-02 (WFF1-TCRA-SD-02)
WFF1-TCRA-TCLP-T1
WFF1-TCRA-TCLP-W1
WFF1-TCRA-TCLP-WW1

Analytical Report For 605107

for

Weston Solutions, Inc

Project Manager: Ed Mackey

Project Name: Wallops

GPL

Laboratories

GPL Laboratories, LLLP certifies that the test results meet all requirements of the NELAC Standards unless otherwise noted.

Pat Hudachun

Reviewed By,
Project Manager

Approved By,
Laboratory Director

The Case Narrative, Chain of Custody, Sample Receipt Checklist, and the cover page of the Sample Analysis Report, are integral parts of GPL Laboratories' report package. If you did not receive all of these documents, please contact GPL immediately.

Sample Receipt

Eleven solids and one water samples were received on 05/18/2006. The samples were delivered by GPL. Sample receipt conditions and temperatures are documented on the Sample Receipt checklist.

Sample Analysis

Samples were prepared and analyzed by GPL using the analytical methodologies indicated on the Sample Analysis Summary Report. In some chromatographic analyses, manual integration is used instead of automated integration because it produces more accurate results. All manual integrations are denoted on the sample quantitation report. Analysis results and limits for soil are reported on a dry weight basis unless otherwise specified on the report.

Volatiles

One water TCLP extract sample was analyzed for TCLP compounds using SW846 method 8260B.

Sample was analyzed within holding time.

Surrogate recoveries were within QC limits except on BKS81755.

Matrix spike analysis was performed on same sample. All spike recoveries were within QC limits.

A laboratory control sample report was analyzed along with the samples batch. All spike recoveries were within QC limits.

Manual integration was performed on some peaks that were improperly integrated by the software. The manually integrated compounds are designated by an "m" next to the area of the quantitation report, and chromatograms for these compounds were submitted with the package.

Semivolatiles

One TCLP extract water sample was extracted using SW846 method 3510C. This sample was analyzed for semivolatile TCLP compounds using method 8270C.

Extraction and analysis holding times were met.

Surrogate recoveries met QC requirements.

QC was shared with work order # 605003. Matrix spike analysis was performed on sample EO1-WC-042706. One spike recovery was outside QC limits for the shared QC .

A laboratory control sample was extracted and analyzed along with this batch. All spike recoveries were within QC limits .

Pesticides

One soil sample was extracted and analyzed for TCLP pesticide compounds using SW846 method 3510C.

Extraction and analysis holding times were met.

All surrogate recoveries were within QC limits.

Matrix spike analysis was shared with work order 605003. Endrin recovery was slightly above QC limits. All other recoveries was within QC limits.

A laboratory control sample was extracted and analyzed along with this batch. All spike recoveries were within QC limits.

Concentrations reported on Form 1s are the higher values of results generated by two columns. However, the analyst determines the most reliable results based on the evaluation of quality control parameters. Flagged concentrations (*) on Form 1 indicate that reported results are the lower value.

Herbicides

One water sample was extracted and analyzed for herbicide TCLP compounds using SW846 method 8151A.

Extraction and analysis holding times were met.

Surrogate recovery was within QC limils.

Matrix spike analyse was shared with work order 605003. All recoveries were within QC limits.

A labortory control sample was extracted and analyzed with the sample batch. All recoveries were within QC limits.

Metals

ICP SOIL NEEDS DILUTION. PRELIM RESULTS.

Two soil samples were analyzed for HSL metals; one water and eight soil samples were analyzed for TCLP metals. EPA SW846 methods were used.

The total samples and TCLP samples were reported on separate forms

A matrix spike and matrix spike duplicate were performed on the batch sample 605109-001 for all required total analytes. A serial dilution was performed for the ICP analytes. The matrix spike was outside of the control limits for magnesium, manganese, potassium, zinc, and mercury; matrix spike duplicate were outside of the control limits for antimony, magnesium, potassium, and mercury. A post digestion analytical spike was performed with recoveries within 15% of the true values for all analytes. No control limits were applied to the matrix spike for aluminum, copper, and iron; matrix spike duplicate for aluminum, calcium, and iron due to an insignificant spike addition. The RPD for matrix spike recoveries was outside of the control limits for calcium, and magnesium.

A matrix spike and matrix spike duplicate were performed on samples WFFI-TCRA-TCLP-F1, and WFFI-TCRA-TCLP-SW-01 for all required TCLP analytes. Serial dilutions were also performed for the ICP analytes. They were within the control limits.

Calibration standards are verified against independent check standards purchased from a commercial vendor of environmental standards.

All GPL QA/QC criteria were met with the exceptions of those mentioned above.

General Chemistry

One water sample was distilled according to SW846 section 7.3 and was analyzed for Reactive Cyanide by method 9014 and Reactive Sulfide by method 9034. A duplicate analysis was performed on this sample. A laboratory control sample was distilled and analyzed along with the batch for each analyte. All QC criteria were met.

One water sample was analyzed for pH by EPA method 150.1. A duplicate analysis was performed on this sample. All QC criteria were met.

One water sample was analyzed for Free Liquid by the Paint Filter Test using SW846 method 9095. A duplicate analysis was performed on this sample. All QC criteria were met.

Other Analysis

One sample was analyzed using method SW 1010. A quality control standard was analyzed together with this sample and met calibration acceptance criteria. There was no flash-point on this sample.

Reviewed By,

Project Manager

Approved By,

Laboratory Director

Sample Summary Report

Weston Solutions, Inc

Work Order: 605107

Client Sample ID	Lab Sample ID	Analytical Method	Matrix	Date Sampled	Date Recieved
WFFI-TCRA-TCLP-SW-01	605107-010-019-1/5	SW8260B_TCLP	WATER	05/18/2006	05/18/2006
	605107-010-019-1/5	SW8270C_TCLP			
	605107-010-019-1/5	SW8081A_TCLP			
	605107-010-019-1/5	SW8151A_TCLP			
	605107-010-019-1/5	SW6010B_TCLP			
	605107-010-019-1/5	SW7470A_TCLP			
	605107-010-019-1/5	SW9014R			
	605107-010-019-1/5	SW9034R			
	605107-010-026-1/1	E150.1			
	605107-010-026-1/1	SW9095A			
	605107-010-026-1/1	SW1010			
WFFI-TCRA-SD-01	605107-001-024-1/1	SW6010B	SOIL	05/17/2006	05/18/2006
	605107-001-024-1/1	SW7471A			
	605107-001-024-1/1	CLP_SOLIDS			
WFFI-TCRA-TCLP-F1	605107-002-013-1/2	SW6010B_TCLP	SOIL	05/17/2006	05/18/2006
	605107-002-013-1/2	SW7471A_TCLP			
WFFI-TCRA-TCLP-F2	605107-003-015-1/2	SW6010B_TCLP	SOIL	05/17/2006	05/18/2006
	605107-003-015-1/2	SW7471A_TCLP			
WFFI-TCRA-TCLP-PED	605107-005-003-1/2	SW6010B_TCLP	SOIL	05/17/2006	05/18/2006
	605107-005-003-1/2	SW7471A_TCLP			
WFFI-TCRA-TCLP-R1-6	605107-008-009-1/2	SW6010B_TCLP	SOIL	05/17/2006	05/18/2006
	605107-008-009-1/2	SW7471A_TCLP			
WFFI-TCRA-TCLP-R7	605107-009-011-1/2	SW6010B_TCLP	SOIL	05/17/2006	05/18/2006
	605107-009-011-1/2	SW7471A_TCLP			
WFFI-TCRA-TCLP-SD-01	605107-011-025-1/1	CLP_SOLIDS	SOIL	05/18/2006	05/18/2006
WFFI-TCRA-TCLP-SD-02	605107-011-025-1/1	SW6010B	SOIL	05/18/2006	05/18/2006
	605107-011-025-1/1	SW7471A			
WFFI-TCRA-TCLP-T1	605107-006-005-1/2	SW6010B_TCLP	SOIL	05/17/2006	05/18/2006
	605107-006-005-1/2	SW7471A_TCLP			
WFFI-TCRA-TCLP-W1	605107-004-001-1/2	SW6010B_TCLP	SOIL	05/17/2006	05/18/2006
	605107-004-001-1/2	SW7471A_TCLP			

Sample Summary Report

Weston Solutions, Inc

Work Order: 605107

Client Sample ID	Lab Sample ID	Analytical Method	Matrix	Date Sampled	Date Recieved
WFFI-TCRA-TCLP-WW1	605107-007-007-1/2	SW6010B_TCLP	SOIL	05/17/2006	05/18/2006
	605107-007-007-1/2	SW7471A_TCLP			

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-SD-01	Lab Sample ID:	605107-001-024-1/1
Sample Date/Time:	05/17/2006 12:55	Percent Moisture:	35.73
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	SW3050B
Prepared Date/Time:	05/22/2006 00:00	Analytical Method:	SW6010B

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	**Aluminum**	**2750**	**D**	**110**	**5**	**mg/kg**	**05/23/06**	**19:24**
2)	**Antimony**	**75.5**	**ND**	**11**	**5**	**mg/kg**	**05/23/06**	**19:24**
3)	**Arsenic**	**12.7**		**2.2**	**1**	**mg/kg**	**05/22/06**	**20:15**
4)	**Barium**	**569**	**D**	**2.8**	**5**	**mg/kg**	**05/23/06**	**19:24**
5)	Beryllium	0.17	J	0.22	1	mg/kg	05/22/06	20:15
6)	Cadmium	1.9	JD	3.3	5	mg/kg	05/23/06	19:24
7)	**Calcium**	**5380**	*	**110**	**1**	**mg/kg**	**05/22/06**	**20:15**
8)	**Chromium**	**56.4**	**D**	**2.8**	**5**	**mg/kg**	**05/23/06**	**19:24**
9)	**Cobalt**	**5.5**	**D**	**2.8**	**5**	**mg/kg**	**05/23/06**	**19:24**
10)	**Copper**	**68.9**	**D**	**5.5**	**5**	**mg/kg**	**05/23/06**	**19:24**
11)	**Iron**	**77900**	**D**	**82.8**	**5**	**mg/kg**	**05/23/06**	**19:24**
12)	**Lead**	**2350**	**D**	**5.5**	**5**	**mg/kg**	**05/23/06**	**19:24**
13)	**Magnesium**	**993**	**N*D**	**138**	**5**	**mg/kg**	**05/23/06**	**19:24**
14)	**Manganese**	**447**	**ND**	**2.8**	**5**	**mg/kg**	**05/23/06**	**19:24**
15)	**Nickel**	**17.4**		**1.1**	**1**	**mg/kg**	**05/22/06**	**20:15**
16)	**Potassium**	**779**	**N**	**27.6**	**1**	**mg/kg**	**05/22/06**	**20:15**
17)	Selenium	2.6	JD	11	5	mg/kg	05/23/06	19:24
18)	**Silver**	**8.2**		**0.55**	**1**	**mg/kg**	**05/22/06**	**20:15**
19)	Sodium	142	JD	1380	5	mg/kg	05/23/06	19:24
20)	Thallium	BQL	UD	16.6	5	mg/kg	05/23/06	19:24
21)	**Vanadium**	**30.6**	**D**	**5.5**	**5**	**mg/kg**	**05/23/06**	**19:24**
22)	**Zinc**	**1220**	**ND**	**11**	**5**	**mg/kg**	**05/23/06**	**19:24**

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-SD-01	Lab Sample ID:	605107-001-024-1/1
Sample Date/Time:	05/17/2006 12:55	Percent Moisture:	35.73
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	SW7471_DIG
Prepared Date/Time:	05/19/2006 16:00	Analytical Method:	SW7471A

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	**Mercury**	**147**	**ND**	**4.3**	**100**	**mg/kg**	**05/22/06**	**19:22**

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-SD-01	Lab Sample ID:	605107-001-024-1/1
Sample Date/Time:	05/17/2006 12:55	Percent Moisture:	35.73
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	NA
Prepared Date/Time:		Analytical Method:	CLP_SOLIDS

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	**Percent Solids**	**64**		**1.0**	**1**	**%**	**05/23/06**	**09:20**

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-F1	Lab Sample ID:	605107-002-013-1/2
Sample Date/Time:	05/17/2006 14:40	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	SW3010A
Prepared Date/Time:	05/20/2006 00:00	Analytical Method:	SW6010B_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	Arsenic	BQL	U	200	1	ug/L	05/22/06	16:59
2)	Barium	BQL	U	1000	1	ug/L	05/22/06	16:59
3)	Cadmium	BQL	U	60	1	ug/L	05/22/06	16:59
4)	Chromium	BQL	U	50	1	ug/L	05/22/06	16:59
5)	Lead	BQL	U	100	1	ug/L	05/22/06	16:59
6)	Selenium	BQL	U	200	1	ug/L	05/22/06	16:59
7)	Silver	BQL	U	50	1	ug/L	05/22/06	16:59

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-F1	Lab Sample ID:	605107-002-013-1/2
Sample Date/Time:	05/17/2006 14:40	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	SW7470A_DIG
Prepared Date/Time:	05/22/2006 23:28	Analytical Method:	SW7471A_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time
1)	Mercury	BQL	U	2	1	ug/L	05/23/06 14:00

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-F2	Lab Sample ID:	605107-003-015-1/2
Sample Date/Time:	05/17/2006 14:50	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	SW3010A
Prepared Date/Time:	05/20/2006 00:00	Analytical Method:	SW6010B_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	Arsenic	BQL	U	200	1	ug/L	05/22/06	17:49
2)	Barium	BQL	U	1000	1	ug/L	05/22/06	17:49
3)	Cadmium	BQL	U	60	1	ug/L	05/22/06	17:49
4)	Chromium	BQL	U	50	1	ug/L	05/22/06	17:49
5)	Lead	BQL	U	100	1	ug/L	05/22/06	17:49
6)	Selenium	BQL	U	200	1	ug/L	05/22/06	17:49
7)	Silver	BQL	U	50	1	ug/L	05/22/06	17:49

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-F2	Lab Sample ID:	605107-003-015-1/2
Sample Date/Time:	05/17/2006 14:50	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	SW7470A_DIG
Prepared Date/Time:	05/22/2006 23:28	Analytical Method:	SW7471A_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time
1)	Mercury	BQL	U	2	1	ug/L	05/23/06 14:09

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-W1	Lab Sample ID:	605107-004-001-1/2
Sample Date/Time:	05/17/2006 14:55	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	SW3010A
Prepared Date/Time:	05/20/2006 00:00	Analytical Method:	SW6010B_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	Arsenic	BQL	U	200	1	ug/L	05/22/06	17:57
2)	Barium	BQL	U	1000	1	ug/L	05/22/06	17:57
3)	Cadmium	BQL	U	60	1	ug/L	05/22/06	17:57
4)	Chromium	BQL	U	50	1	ug/L	05/22/06	17:57
5)	Lead	BQL	U	100	1	ug/L	05/22/06	17:57
6)	Selenium	BQL	U	200	1	ug/L	05/22/06	17:57
7)	Silver	BQL	U	50	1	ug/L	05/22/06	17:57

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-W1	Lab Sample ID:	605107-004-001-1/2
Sample Date/Time:	05/17/2006 14:55	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	SW7470A_DIG
Prepared Date/Time:	05/22/2006 23:28	Analytical Method:	SW7471A_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time
1)	Mercury	BQL	U	2	1	ug/L	05/23/06 14:11

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-PED	Lab Sample ID:	605107-005-003-1/2
Sample Date/Time:	05/17/2006 15:05	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	SW3010A
Prepared Date/Time:	05/20/2006 00:00	Analytical Method:	SW6010B_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	Arsenic	BQL	U	200	1	ug/L	05/22/06	18:06
2)	Barium	BQL	U	1000	1	ug/L	05/22/06	18:06
3)	Cadmium	BQL	U	60	1	ug/L	05/22/06	18:06
4)	Chromium	BQL	U	50	1	ug/L	05/22/06	18:06
5)	Lead	BQL	U	100	1	ug/L	05/22/06	18:06
6)	Selenium	BQL	U	200	1	ug/L	05/22/06	18:06
7)	Silver	BQL	U	50	1	ug/L	05/22/06	18:06

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-PED	Lab Sample ID:	605107-005-003-1/2
Sample Date/Time:	05/17/2006 15:05	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	SW7470A_DIG
Prepared Date/Time:	05/22/2006 23:28	Analytical Method:	SW7471A_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time
1)	Mercury	BQL	U	2	1	ug/L	05/23/06 14:14

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-T1	Lab Sample ID:	605107-006-005-1/2
Sample Date/Time:	05/17/2006 15:20	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	SW3010A
Prepared Date/Time:	05/20/2006 00:00	Analytical Method:	SW6010B_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time
1)	Arsenic	BQL	U	200	1	ug/L	05/22/06 18:14
2)	Barium	BQL	U	1000	1	ug/L	05/22/06 18:14
3)	Cadmium	BQL	U	60	1	ug/L	05/22/06 18:14
4)	Chromium	BQL	U	50	1	ug/L	05/22/06 18:14
5)	Lead	BQL	U	100	1	ug/L	05/22/06 18:14
6)	Selenium	BQL	U	200	1	ug/L	05/22/06 18:14
7)	Silver	BQL	U	50	1	ug/L	05/22/06 18:14

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-T1	Lab Sample ID:	605107-006-005-1/2
Sample Date/Time:	05/17/2006 15:20	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	SW7470A_DIG
Prepared Date/Time:	05/22/2006 23:28	Analytical Method:	SW7471A_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time
1)	Mercury	BQL	U	2	1	ug/L	05/23/06 14:16

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-WW1	Lab Sample ID:	605107-007-007-1/2
Sample Date/Time:	05/17/2006 15:40	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	SW3010A
Prepared Date/Time:	05/20/2006 00:00	Analytical Method:	SW6010B_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	Arsenic	BQL	U	200	1	ug/L	05/22/06	18:23
2)	Barium	BQL	U	1000	1	ug/L	05/22/06	18:23
3)	Cadmium	BQL	U	60	1	ug/L	05/22/06	18:23
4)	Chromium	BQL	U	50	1	ug/L	05/22/06	18:23
5)	Lead	BQL	U	100	1	ug/L	05/22/06	18:23
6)	Selenium	BQL	U	200	1	ug/L	05/22/06	18:23
7)	Silver	BQL	U	50	1	ug/L	05/22/06	18:23

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-WW1	Lab Sample ID:	605107-007-007-1/2
Sample Date/Time:	05/17/2006 15:40	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	SW7470A_DIG
Prepared Date/Time:	05/22/2006 23:28	Analytical Method:	SW7471A_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	Mercury	BQL	U	2	1	ug/L	05/23/06	14:18

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-R1-6	Lab Sample ID:	605107-008-009-1/2
Sample Date/Time:	05/17/2006 17:05	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	SW3010A
Prepared Date/Time:	05/20/2006 00:00	Analytical Method:	SW6010B_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	Arsenic	BQL	U	200	1	ug/L	05/22/06	18:31
2)	Barium	BQL	U	1000	1	ug/L	05/22/06	18:31
3)	Cadmium	BQL	U	60	1	ug/L	05/22/06	18:31
4)	Chromium	BQL	U	50	1	ug/L	05/22/06	18:31
5)	Lead	BQL	U	100	1	ug/L	05/22/06	18:31
6)	Selenium	BQL	U	200	1	ug/L	05/22/06	18:31
7)	Silver	BQL	U	50	1	ug/L	05/22/06	18:31

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-R1-6	Lab Sample ID:	605107-008-009-1/2
Sample Date/Time:	05/17/2006 17:05	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	SW7470A_DIG
Prepared Date/Time:	05/22/2006 23:28	Analytical Method:	SW7471A_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	Mercury	BQL	U	2	1	ug/L	05/23/06	14:25

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-R7	Lab Sample ID:	605107-009-011-1/2
Sample Date/Time:	05/17/2006 17:10	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	SW3010A
Prepared Date/Time:	05/20/2006 00:00	Analytical Method:	SW6010B_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	Arsenic	BQL	U	200	1	ug/L	05/22/06	18:39
2)	Barium	BQL	U	1000	1	ug/L	05/22/06	18:39
3)	Cadmium	BQL	U	60	1	ug/L	05/22/06	18:39
4)	Chromium	BQL	U	50	1	ug/L	05/22/06	18:39
5)	**Lead**	**208**		**100**	**1**	**ug/L**	**05/22/06**	**18:39**
6)	Selenium	BQL	U	200	1	ug/L	05/22/06	18:39
7)	Silver	BQL	U	50	1	ug/L	05/22/06	18:39

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-R7	Lab Sample ID:	605107-009-011-1/2
Sample Date/Time:	05/17/2006 17:10	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	SW7470A_DIG
Prepared Date/Time:	05/22/2006 23:28	Analytical Method:	SW7471A_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time
1)	Mercury	BQL	U	2	1	ug/L	05/23/06 14:28

Client Name:	Weston Solutions, Inc	Sample Matrix:	WATER
Client Sample ID:	WFFI-TCRA-TCLP-SW-01	Lab Sample ID:	605107-010-019-1/5
Sample Date/Time:	05/18/2006 17:10	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	SW5030B
Prepared Date/Time:	05/23/2006 07:39	Analytical Method:	SW8260B_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	1,1-Dichloroethene	BQL	U	100	10	ug/L	05/23/06	17:42
2)	1,2-Dichloroethane	BQL	U	100	10	ug/L	05/23/06	17:42
3)	1,4-Dichlorobenzene	BQL	U	100	10	ug/L	05/23/06	17:42
4)	2-Butanone	BQL	U	100	10	ug/L	05/23/06	17:42
5)	Benzene	BQL	U	100	10	ug/L	05/23/06	17:42
6)	Carbon Tetrachloride	BQL	U	100	10	ug/L	05/23/06	17:42
7)	Chlorobenzene	BQL	U	100	10	ug/L	05/23/06	17:42
8)	Chloroform	BQL	U	100	10	ug/L	05/23/06	17:42
9)	Tetrachloroethylene	BQL	U	100	10	ug/L	05/23/06	17:42
10)	Trichloroethene	BQL	U	100	10	ug/L	05/23/06	17:42
11)	Vinyl Chloride	BQL	U	100	10	ug/L	05/23/06	17:42

#	Surrogate Parameter	Percent Recovery	Control Limits	Dil Fact	Analysis Date/Time	
12)	1,2-Dichlorobenzene-d4	111 %	64 - 132	10	05/23/06	17:42
13)	1,2-Dichloroethane-d4	74 %	70 - 120	10	05/23/06	17:42
14)	4-Bromofluorobenzene	104 %	75 - 120	10	05/23/06	17:42
15)	Toluene-D8	88 %	85 - 120	10	05/23/06	17:42

Client Name:	Weston Solutions, Inc	Sample Matrix:	WATER
Client Sample ID:	WFFI-TCRA-TCLP-SW-01	Lab Sample ID:	605107-010-019-1/5
Sample Date/Time:	05/18/2006 17:10	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	SW3510C
Prepared Date/Time:	05/22/2006 00:00	Analytical Method:	SW8270C_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	1,4-Dichlorobenzene	BQL	U	50	1	ug/L	05/22/06	13:46
2)	2,4,5-Trichlorophenol	BQL	U	50	1	ug/L	05/22/06	13:46
3)	2,4,6-Trichlorophenol	BQL	U	50	1	ug/L	05/22/06	13:46
4)	2,4-Dinitrotoluene	BQL	U	50	1	ug/L	05/22/06	13:46
5)	2-methylphenol	BQL	U	50	1	ug/L	05/22/06	13:46
6)	3 & 4-Methylphenol	BQL	U	50	1	ug/L	05/22/06	13:46
7)	Hexachlorobenzene	BQL	U	50	1	ug/L	05/22/06	13:46
8)	Hexachlorobutadiene	BQL	U	50	1	ug/L	05/22/06	13:46
9)	Hexachloroethane	BQL	U	50	1	ug/L	05/22/06	13:46
10)	Nitrobenzene	BQL	U	50	1	ug/L	05/22/06	13:46
11)	Pentachlorophenol	BQL	U	100	1	ug/L	05/22/06	13:46
12)	Pyridine	BQL	U	50	1	ug/L	05/22/06	13:46

#	Surrogate Parameter	Percent Recovery	Control Limits	Dil Fact	Analysis Date/Time	
13)	2,4,6-Tribromophenol	109 %	35 - 157	1	05/22/06	13:46
14)	2-Fluorobiphenyl	84 %	46 - 108	1	05/22/06	13:46
15)	2-Fluorophenol	43 %	28 - 116	1	05/22/06	13:46
16)	Nitrobenzene-d5	94 %	38 - 122	1	05/22/06	13:46
17)	Phenol-d5	34 %	34 - 118	1	05/22/06	13:46
18)	p-Terphenyl-d14	105 %	29 - 133	1	05/22/06	13:46

Client Name:	Weston Solutions, Inc	Sample Matrix:	WATER
Client Sample ID:	WFFI-TCRA-TCLP-SW-01	Lab Sample ID:	605107-010-019-1/5
Sample Date/Time:	05/18/2006 17:10	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	SW3510C
Prepared Date/Time:	05/22/2006 00:00	Analytical Method:	SW8081A_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	Chlordane	BQL	U	5.0	1	ug/L	05/22/06	17:07
2)	Endrin	BQL	U	0.25	1	ug/L	05/22/06	17:07
3)	Gamma-BHC (Lindane)	BQL	U	0.25	1	ug/L	05/22/06	17:07
4)	Heptachlor	BQL	U	0.25	1	ug/L	05/22/06	17:07
5)	Heptachlor Epoxide	BQL	U	0.25	1	ug/L	05/22/06	17:07
6)	Methoxychlor	BQL	U	0.25	1	ug/L	05/22/06	17:07
7)	Toxaphene	BQL	U	5.0	1	ug/L	05/22/06	17:07

#	Surrogate Parameter	Percent Recovery	Control Limits	Dil Fact	Analysis Date/Time	
8)	Decachlorobiphenyl	93 %	16 - 166	1	05/22/06	17:07
9)	Decachlorobiphenyl	78 %	16 - 166	1	05/22/06	17:07
10)	Tetrachloro-m-xylene	83 %	6 - 154	1	05/22/06	17:07
11)	Tetrachloro-m-xylene	86 %	6 - 154	1	05/22/06	17:07

Client Name:	Weston Solutions, Inc	Sample Matrix:	WATER
Client Sample ID:	WFFI-TCRA-TCLP-SW-01	Lab Sample ID:	605107-010-019-1/5
Sample Date/Time:	05/18/2006 17:10	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	EXT_SW8151
Prepared Date/Time:	05/20/2006 00:00	Analytical Method:	SW8151A_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	2,4,5-TP (Silvex)	BQL	U	5.0	1	ug/L	05/23/06	08:57
2)	2,4-D	BQL	U	5.0	1	ug/L	05/23/06	08:57

#	Surrogate Parameter	Percent Recovery	Control Limits	Dil Fact	Analysis Date/Time	
3)	2,4-DCAA	72 %	61 - 136	1	05/23/06	08:57
4)	2,4-DCAA	90 %	61 - 136	1	05/23/06	08:57

Client Name:	Weston Solutions, Inc	Sample Matrix:	WATER
Client Sample ID:	WFFI-TCRA-TCLP-SW-01	Lab Sample ID:	605107-010-019-1/5
Sample Date/Time:	05/18/2006 17:10	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	SW3010A
Prepared Date/Time:	05/20/2006 00:00	Analytical Method:	SW6010B_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	Arsenic	BQL	U	200	1	ug/L	05/22/06	18:48
2)	Barium	BQL	U	1000	1	ug/L	05/22/06	18:48
3)	Cadmium	BQL	U	60	1	ug/L	05/22/06	18:48
4)	Chromium	BQL	U	50	1	ug/L	05/22/06	18:48
5)	Lead	BQL	U	100	1	ug/L	05/22/06	18:48
6)	Selenium	BQL	U	200	1	ug/L	05/22/06	18:48
7)	Silver	BQL	U	50	1	ug/L	05/22/06	18:48

Client Name:	Weston Solutions, Inc	Sample Matrix:	WATER
Client Sample ID:	WFFI-TCRA-TCLP-SW-01	Lab Sample ID:	605107-010-019-1/5
Sample Date/Time:	05/18/2006 17:10	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	SW7470A_DIG
Prepared Date/Time:	05/22/2006 23:28	Analytical Method:	SW7470A_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	Mercury	BQL	U	2	1	ug/L	05/23/06	14:32

Client Name:	Weston Solutions, Inc	Sample Matrix:	WATER
Client Sample ID:	WFFI-TCRA-TCLP-SW-01	Lab Sample ID:	605107-010-019-1/5
Sample Date/Time:	05/18/2006 17:10	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	SW7.3_EXT
Prepared Date/Time:	05/22/2006 09:00	Analytical Method:	SW9014R

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time
1)	Cyanide, Reactive	BQL	U	0.030	1	mg/L	05/22/06 16:00

Client Name:	Weston Solutions, Inc	Sample Matrix:	WATER
Client Sample ID:	WFFI-TCRA-TCLP-SW-01	Lab Sample ID:	605107-010-019-1/5
Sample Date/Time:	05/18/2006 17:10	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	NA
Prepared Date/Time:		Analytical Method:	SW9034R

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time
1)	Sulfide, Reactive	BQL	U	10	1	mg/L	05/22/06 11:15

Client Name:	Weston Solutions, Inc	Sample Matrix:	WATER
Client Sample ID:	WFFI-TCRA-TCLP-SW-01	Lab Sample ID:	605107-010-026-1/1
Sample Date/Time:	05/18/2006 17:10	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	NA
Prepared Date/Time:		Analytical Method:	E150.1

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time
1)	pH	5.8		0.0	1	pH	05/19/06 12:00

Client Name:	Weston Solutions, Inc	Sample Matrix:	WATER
Client Sample ID:	WFFI-TCRA-TCLP-SW-01	Lab Sample ID:	605107-010-026-1/1
Sample Date/Time:	05/18/2006 17:10	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	NA
Prepared Date/Time:		Analytical Method:	SW9095A

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	**Percent Free Liquid**	**100**		**0.10**	**1**	**%**	**05/19/06**	**13:30**

Client Name:	Weston Solutions, Inc	Sample Matrix:	WATER
Client Sample ID:	WFFI-TCRA-TCLP-SW-01	Lab Sample ID:	605107-010-026-1/1
Sample Date/Time:	05/18/2006 17:10	Percent Moisture:	NA
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	NA
Prepared Date/Time:		Analytical Method:	SW1010

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	Flash Point	BQL	U	100	1	DC	05/22/06	00:00

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-SD-02	Lab Sample ID:	605107-011-025-1/1
Sample Date/Time:	05/18/2006 17:10	Percent Moisture:	24.53
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	SW3050B
Prepared Date/Time:	05/22/2006 00:00	Analytical Method:	SW6010B

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	**Aluminum**	**3730**		**18.9**	**1**	**mg/kg**	**05/22/06**	**20:23**
2)	Antimony	0.71	JN	1.9	1	mg/kg	05/22/06	20:23
3)	**Arsenic**	**2.7**		**1.9**	**1**	**mg/kg**	**05/22/06**	**20:23**
4)	**Barium**	**14.1**		**0.47**	**1**	**mg/kg**	**05/22/06**	**20:23**
5)	Beryllium	0.16	J	0.19	1	mg/kg	05/22/06	20:23
6)	Cadmium	BQL	U	0.57	1	mg/kg	05/22/06	20:23
7)	**Calcium**	**191**	*	**94.6**	**1**	**mg/kg**	**05/22/06**	**20:23**
8)	**Chromium**	**4.6**		**0.47**	**1**	**mg/kg**	**05/22/06**	**20:23**
9)	**Cobalt**	**0.80**		**0.47**	**1**	**mg/kg**	**05/22/06**	**20:23**
10)	**Copper**	**1.3**		**0.95**	**1**	**mg/kg**	**05/22/06**	**20:23**
11)	**Iron**	**3200**		**14.2**	**1**	**mg/kg**	**05/22/06**	**20:23**
12)	**Lead**	**5.5**		**0.95**	**1**	**mg/kg**	**05/22/06**	**20:23**
13)	**Magnesium**	**277**	N*	**23.7**	**1**	**mg/kg**	**05/22/06**	**20:23**
14)	**Manganese**	**45.6**	N	**0.47**	**1**	**mg/kg**	**05/22/06**	**20:23**
15)	**Nickel**	**2.1**		**0.95**	**1**	**mg/kg**	**05/22/06**	**20:23**
16)	**Potassium**	**154**	N	**23.7**	**1**	**mg/kg**	**05/22/06**	**20:23**
17)	Selenium	BQL	U	1.9	1	mg/kg	05/22/06	20:23
18)	Silver	BQL	U	0.47	1	mg/kg	05/22/06	20:23
19)	Sodium	83.8	J	237	1	mg/kg	05/22/06	20:23
20)	Thallium	BQL	U	2.8	1	mg/kg	05/22/06	20:23
21)	**Vanadium**	**6.8**		**0.95**	**1**	**mg/kg**	**05/22/06**	**20:23**
22)	**Zinc**	**10.6**	N	**1.9**	**1**	**mg/kg**	**05/22/06**	**20:23**

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-SD-02	Lab Sample ID:	605107-011-025-1/1
Sample Date/Time:	05/18/2006 17:10	Percent Moisture:	24.53
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	SW7471_DIG
Prepared Date/Time:	05/19/2006 16:00	Analytical Method:	SW7471A

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time
1)	Mercury	0.019	JN	0.041	1	mg/kg	05/22/06 19:24

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-SD-01	Lab Sample ID:	605107-011-025-1/1
Sample Date/Time:	05/18/2006 17:10	Percent Moisture:	24.53
Receipt Date/Time:	05/18/2006 07:55	Preparation Method:	NA
Prepared Date/Time:		Analytical Method:	CLP_SOLIDS

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	**Percent Solids**	**75**		**1.0**	**1**	**%**	**05/23/06**	**09:20**

Qualifier Definitions

Weston Solutions, Inc

Work Order: 605107

All Departments

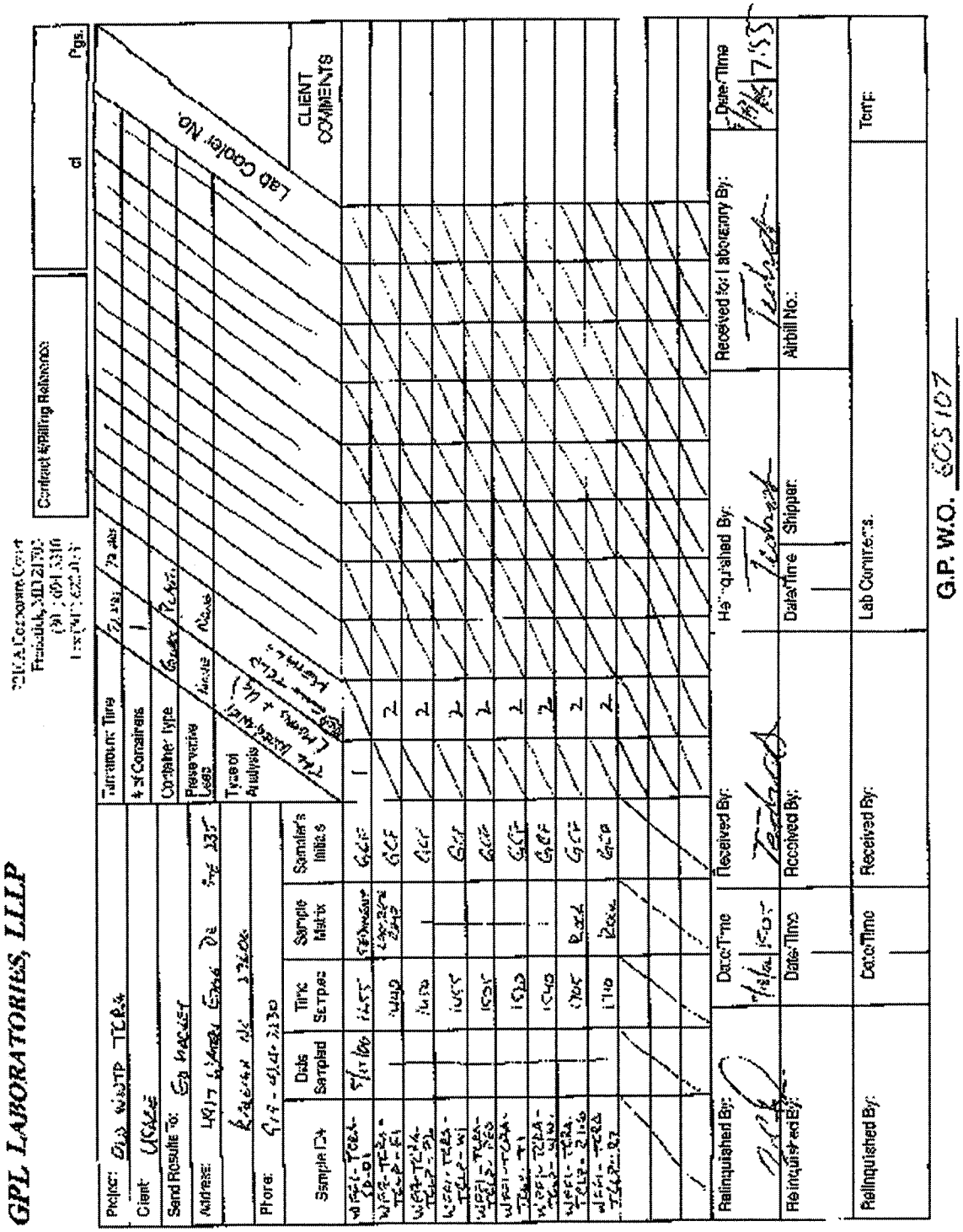
U	Indicates that the compound was analyzed for but not detected
BQL	Below Quantitation Limit

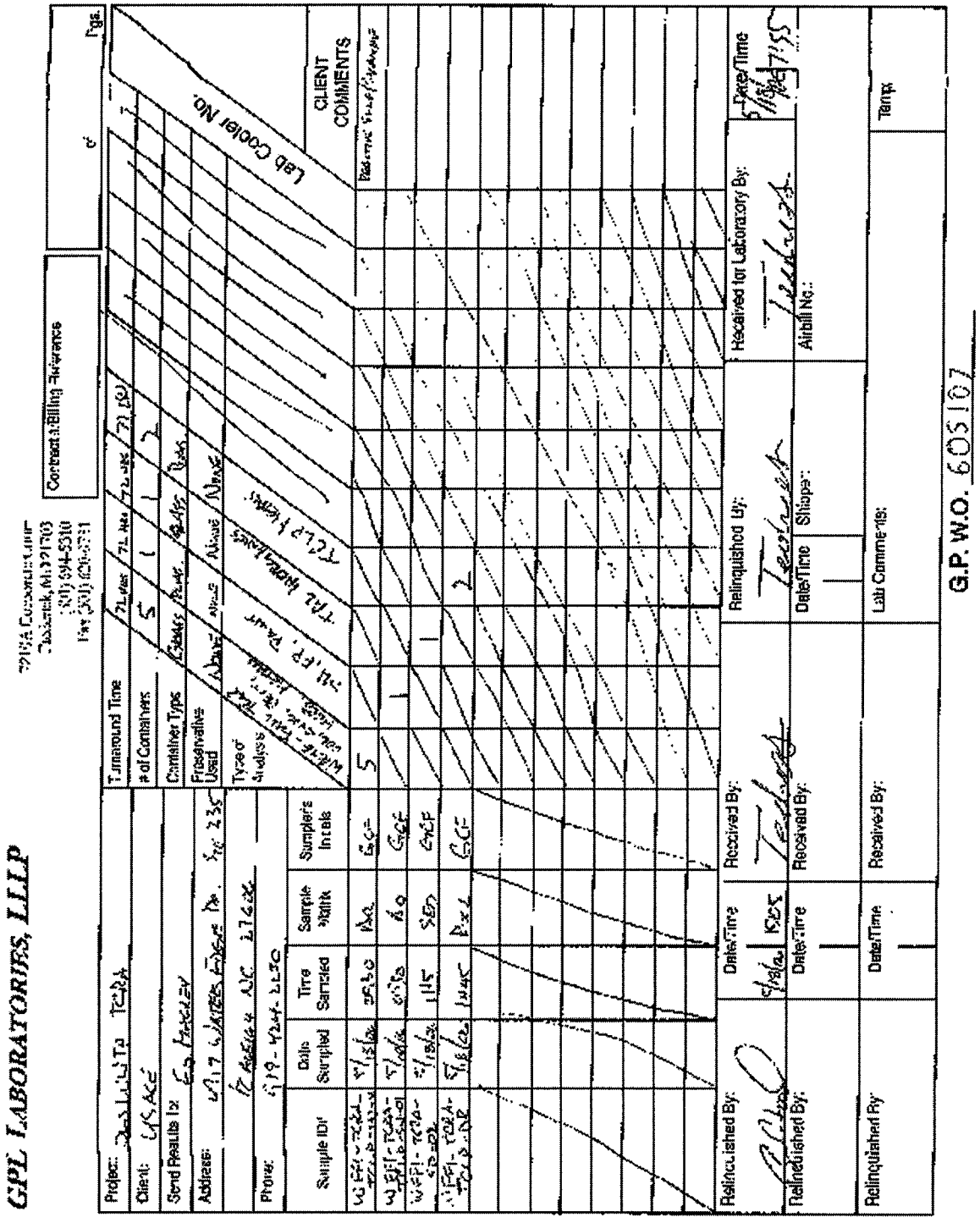
Organics

B	Indicates that the analyte was found in the associated blank as well as in the sample
D	Indicates that the analyte was reported from a diluted analysis
E	Indicates that the concentration detected exceeded the calibration range of the instrument
J	Value is less than the reporting limit but greater than the MDL
P	Indicates that there is greater than 25% difference for detected pesticide/Arochlor results between the two GC columns

Metals

J	Indicates that the reported value was less than the reporting limit but greater than or equal to the IDL/MDL
E	Indicates that the reported value is estimated because of the possible presence of interference (i.e. the serial dilution not within control limits)
H	Indicates that the element was found in the associated blank as well as in the sample and the value is greater than or equal to the reporting limit
D	Indicates that the analyte was reported from a diluted analysis
N	Spiked sample recovery not within control limits
*	Duplicate analysis not within control limits


GPL LABORATORIES, LLLP
CLIENT COMMENTS
Lab Cooler No.
Turnaround Time
# of Containers
Container Type
Preservative Used
Type of Analysis
Sample ID
Date Sampled
Time Sampled
Sample Matrix
Sampler's Initials
Relinquished By:
Received By:
Relinquished By:
Received By:
Relinquished By:
Received By:
Received for Laboratory By:
Airbill No:
Lab Comments:
Temp:
G.P. W.O. 605107


GPL LABORATORIES, LLLP
Project:
Client:
Send Results to:
Address:
Phone:
Turnaround Time
# of Containers
Container Type
Preservatives Used
Type of Analysis
Contract/Billing Reference
Lab Cooler No.
CLIENT COMMENTS
Sample ID#
Date Sampled
Time Sampled
Sample Matrix
Samplers Initials
Relinquished By:
Received By:
Date/Time
Relinquished by:
Received for Laboratory By:
Date/Time
Shipped:
Airbill No.:
Lab Comments:
Temp.
Page/Time
G.P.W.O. 605107

GPL Laboratories, LLLP

Figure 1
SAMPLE RECEIPT CHECKLIST

W.O. No: 605107
Client Name: Weston
Date Received: 05/18/06
Time Received: 07:35
Received By: Tolvers

Carrier Name: GPL
Prepared (Logged In) By: CJL 05/19/06 (Initials Date)
Project:
Site:
VOA Holding Blank I.D. No:

	YES	NO
Airbill/Manifest Present?		✓
No ____		
Shipping Container in Good Condition?	✓	
Custody Seals Present on Shipping Container?	✓	
Condition: Broken ____ Intact-not dated or signed ____ Intact-dated and signed ✓		
Usage of Tamper Evident Type	✓	
Chain-of-Custody Present?	✓	
Chain-of-Custody Agrees with Sample Labels?	✓	
Chain-of-Custody Signed?	✓	
Packing Present in Shipping Container? Type of Packing Bubble Wrap	✓	
Custody seals on Sample Bottles? Condition: Good ____ Broken ____		✓
Total Number of Sample Bottles 26		
Total Number of Samples 12		
Samples Intact?	✓	
Sufficient Sample Volume for Indicated Test?	✓	

	YES	NO
Trip Blanks: No. of Sets ____		✓
Field Blanks: No. of Sets ____		✓
Equip. Blank: No. of Sets ____		✓
Field Duplicate: No. of Sets		✓
MS/MSD: No of Sets ____		✓
VOA Vials Have Zero Headspace?		NA
If yes, smaller or greater than a Green Pea (see comments)		
Preservatives Added to Sample?		✓
pH Check Required?		✓
Performed By? ____		
Ice Present in Shipping Container?	✓	

Container #	Temp.	Container #	Temp.
1	2°		
2	2°		

Project Manager Contacted?
Name: Pat
Date Contacted: 05/19/06

Any NO response must be detailed in the comments section below. If items are not applicable to particular samples or contracts, they should be marked N/A.

COMMENTS: Sample WFFI-TCRA-TCLP-SW01 appears on the COC Twice, I entered both ~~cost~~ Rows as one sample. WFFI-TCRA-TCLP-PR was put on hold because the Project Manager informed me it had been canceled by the Client

Checklist Completed By: Chris Lyons
Date: 05/19/06

SOP No: F-2V14

APPENDIX D.3

ANALYTICAL REPORT FOR 605117

Sample(s): WFF1-TCRA-TCLP-03 (WFF1-TCRA-TCLP-SS-03)
WFF1-TCRA-SS-01
WFF1-TCRA-SS-02
WFF1-TCRA-SS-02-D
WFF1-TCRA-SS-04
WFF1-TCRA-TCLP-DR1-5

Analytical Report For 605117

for

Weston Solutions, Inc

Project Manager: Ed Mackey

Project Name: Wallops

GPL

Laboratories

GPL Laboratories, LLLP certifies that the test results meet all requirements of the NELAC Standards unless otherwise noted.

Reviewed By,
Project Manager

Approved By,
Laboratory Director

The Case Narrative, Chain of Custody, Sample Receipt Checklist, and the cover page of the Sample Analysis Report, are integral parts of GPL Laboratories' report package. If you did not receive all of these documents, please contact GPL immediately.

Sample Receipt

Six soil samples were received on 05/19/2006. The samples were delivered by GPL courier. Sample receipt conditions and temperatures are documented on the Sample Receipt checklist.

Sample Analysis

Samples were prepared and analyzed by GPL using the analytical methodologies indicated on the Sample Analysis Summary Report. In some chromatographic analyses, manual integration is used instead of automated integration because it produces more accurate results. All manual integrations are denoted on the sample quantitation report. Analysis results and limits for soil are reported on a dry weight basis unless otherwise specified on the report.

Volatiles

One soil TCLP extract sample was analyzed for TCLP compounds using SW846 method 8260B.

Sample was analyzed within holding time.

Surrogate recoveries were within QC limits.

Matrix spike analysis was shared with work order 605107, performed on sample WFFI-TCRA-TCLP-SW-01. All spike recoveries were within QC limits.

A laboratory control sample report was analyzed along with the samples batch. All spike recoveries were within QC limits.

Manual integration was performed on some peaks that were improperly integrated by the software. The manually integrated compounds are designated by an "m" next to the area of the quantitation report, and chromatograms for these compounds were submitted with the package.

Semivolatiles

One TCLP soil sample was extracted using SW846 method 3510C. This sample was analyzed for semivolatile TCLP compounds using method 8270C.

Extraction and analysis holding times were met.

All surrogate recoveries were within QC limits.

QC was shared with work order # 605003. Matrix spike analysis was performed on sample EO1-WC-042706. One spike recovery was outside QC limits .

A laboratory control sample was extracted and analyzed along with this batch. All spike recoveries were within QC limits .

Pesticides

One soil sample was extracted and analyzed for TCLP pesticide compounds using SW846 method 3510C.

Extraction and analysis holding times were met.

All surrogate recoveries were within QC limits.

Matrix spike analysis was shared with work order 605003. Endrin recovery was slightly above QC limits. All other recoveries was within QC limits.

A laboratory control sample was extracted and analyzed along with this batch. All spike recoveries were within QC limits .

Concentrations reported on Form 1s are the higher values of results generated by two columns. However, the analyst determines the most reliable results based on the evaluation of quality control parameters. Flagged concentrations (*) on Form 1 indicate that reported results are the lower value.

Herbicides

One soil sample was extracted and analyzed for herbicide TCLP compounds using SW846 method 8151A.

Extraction and analysis holding times were met.

Surrogate recovery was within QC limils.

Matrix spike analyse was share with work order 605099. All recoveries were within QC limits.

A labortory control sample was extracted and analyzed with the sample batch. All recoveries were within QC limits.

Metals

Four soil samples were analyzed for HSL metals; two soil samples were analyzed for TCLP metals. EPA SW846 methods were used.

The total samples and TCLP samples were reported on separate forms

A matrix spike, matrix spike duplicate, and serial dilution were performed on the batch sample 605111-001 for all required total ICP analytes. The matrix spike and matrix spike duplicate were outside of the control limits for antimony, magnesium, potassium, and vanadium. A post digestion analytical spike was performed with recoveries within 15% of the true values for all analytes. No control limits were applied to the matrix spike for aluminum, and iron; matrix spike duplicate for aluminum, iron, and manganese due to an insignificant spike addition. The RPD for matrix spike recoveries was outside of the control limits for manganese. The serial dilution was outside of the control limits for beryllium, magnesium, and potassium.

A matrix spike and matrix spike duplicate were performed on sample WFFI-TCRA-SS-04 for total mercury. They were within the control limits.

A matrix spike, matrix spike duplicate, and serial dilution were performed on sample WFFI-TCRA-TCLP-03 for all required TCLP ICP analytes. They were within the control limits.

A matrix spike and matrix spike duplicate were performed on sample WFFI-TCRA-TCLP-DRI-5 for TCLP mercury. They were within the control limits.

Calibration standards are verified against independent check standards purchased from a commercial vendor of environmental standards.

All GPL QA/QC criteria were met with the exceptions of those mentioned above.

General Chemistry

One soil sample was distilled according to SW846 section 7.3 and was analyzed for Reactive Cyanide by method 9014 and Reactive Sulfide by method 9034. A duplicate analysis was shared with GPL work order 605099. A laboratory control sample was distilled and analyzed along with the batch for each analyte. All QC criteria were met.

Pat Wiebschmann

Reviewed By,

Project Manager

Approved By,

Laboratory Director

GPL Laboratories, LLLP

Sample Summary Report

Weston Solutions, Inc

Work Order: 605117

Client Sample ID	Lab Sample ID	Analytical Method	Matrix	Date Sampled	Date Recieved
WFFI-TCRA-TCLP-03	605117-005-005-1/2	SW8260B_TCLP	WATER	05/19/2006	05/22/2006
WFFI-TCRA-SS-01	605117-001-001-1/1	SW6010B	SOIL	05/18/2006	05/22/2006
	605117-001-001-1/1	SW7471A			
	605117-001-001-1/1	CLP_SOLIDS			
WFFI-TCRA-SS-02	605117-002-002-1/1	SW6010B	SOIL	05/18/2006	05/22/2006
	605117-002-002-1/1	SW7471A			
	605117-002-002-1/1	CLP_SOLIDS			
WFFI-TCRA-SS-02-D	605117-003-003-1/1	SW6010B	SOIL	05/18/2006	05/22/2006
	605117-003-003-1/1	SW7471A			
	605117-003-003-1/1	CLP_SOLIDS			
WFFI-TCRA-SS-04	605117-004-004-1/1	SW6010B	SOIL	05/18/2006	05/22/2006
	605117-004-004-1/1	SW7471A			
	605117-004-004-1/1	CLP_SOLIDS			
WFFI-TCRA-TCLP-03	605117-005-005-1/2	SW8270C_TCLP	SOIL	05/19/2006	05/22/2006
	605117-005-005-1/2	SW8081A_TCLP			
	605117-005-005-1/2	SW8151A_TCLP			
	605117-005-005-1/2	SW6010B_TCLP			
	605117-005-005-1/2	SW7471A_TCLP			
	605117-005-005-1/2	CLP_SOLIDS			
	605117-005-005-1/2	SW9014R			
	605117-005-005-1/2	SW9034R			
WFFI-TCRA-TCLP-DR1-5	605117-006-007-1/2	SW6010B_TCLP	SOIL	05/19/2006	05/22/2006
	605117-006-007-1/2	SW7471A_TCLP			

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-SS-01	Lab Sample ID:	605117-001-001-1/1
Sample Date/Time:	05/18/2006 18:00	Percent Moisture:	7.89
Receipt Date/Time:	05/22/2006 08:09	Preparation Method:	SW3050B
Prepared Date/Time:	05/22/2006 00:00	Analytical Method:	SW6010B

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	**Aluminum**	**5490**		**17.9**	**1**	**mg/kg**	**05/23/06**	**00:51**
2)	Antimony	0.49	JN	1.8	1	mg/kg	05/23/06	00:51
3)	**Arsenic**	**2.4**		**1.8**	**1**	**mg/kg**	**05/23/06**	**00:51**
4)	**Barium**	**18.5**		**0.45**	**1**	**mg/kg**	**05/23/06**	**00:51**
5)	**Beryllium**	**0.20**	**E**	**0.18**	**1**	**mg/kg**	**05/23/06**	**00:51**
6)	Cadmium	BQL	U	0.54	1	mg/kg	05/23/06	00:51
7)	**Calcium**	**14600**		**89.7**	**1**	**mg/kg**	**05/23/06**	**00:51**
8)	**Chromium**	**5.8**		**0.45**	**1**	**mg/kg**	**05/23/06**	**00:51**
9)	**Cobalt**	**1.1**		**0.45**	**1**	**mg/kg**	**05/23/06**	**00:51**
10)	**Copper**	**5.0**		**0.9**	**1**	**mg/kg**	**05/23/06**	**00:51**
11)	**Iron**	**3800**		**13.5**	**1**	**mg/kg**	**05/23/06**	**00:51**
12)	**Lead**	**5.4**		**0.9**	**1**	**mg/kg**	**05/23/06**	**00:51**
13)	**Magnesium**	**950**	**NE**	**22.4**	**1**	**mg/kg**	**05/23/06**	**00:51**
14)	**Manganese**	**52.5**	*	**0.45**	**1**	**mg/kg**	**05/23/06**	**00:51**
15)	**Nickel**	**2.7**		**0.9**	**1**	**mg/kg**	**05/23/06**	**00:51**
16)	**Potassium**	**191**	**NE**	**22.4**	**1**	**mg/kg**	**05/23/06**	**00:51**
17)	Selenium	0.30	J	1.8	1	mg/kg	05/23/06	00:51
18)	Silver	BQL	U	0.45	1	mg/kg	05/23/06	00:51
19)	Sodium	78.7	J	224	1	mg/kg	05/23/06	00:51
20)	Thallium	BQL	U	2.7	1	mg/kg	05/23/06	00:51
21)	**Vanadium**	**7.2**	**N**	**0.9**	**1**	**mg/kg**	**05/23/06**	**00:51**
22)	**Zinc**	**10.6**		**1.8**	**1**	**mg/kg**	**05/23/06**	**00:51**

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-SS-01	Lab Sample ID:	605117-001-001-1/1
Sample Date/Time:	05/18/2006 18:00	Percent Moisture:	7.89
Receipt Date/Time:	05/22/2006 08:09	Preparation Method:	SW7471_DIG
Prepared Date/Time:	05/22/2006 21:45	Analytical Method:	SW7471A

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	**Mercury**	**1.3**		**0.032**	**1**	**mg/kg**	**05/23/06**	**10:11**

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-SS-01	Lab Sample ID:	605117-001-001-1/1
Sample Date/Time:	05/18/2006 18:00	Percent Moisture:	7.89
Receipt Date/Time:	05/22/2006 08:09	Preparation Method:	NA
Prepared Date/Time:		Analytical Method:	CLP_SOLIDS

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	**Percent Solids**	**92**		**1.0**	**1**	**%**	**05/23/06**	**09:20**

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-SS-02	Lab Sample ID:	605117-002-002-1/1
Sample Date/Time:	05/18/2006 18:05	Percent Moisture:	5.54
Receipt Date/Time:	05/22/2006 08:09	Preparation Method:	SW3050B
Prepared Date/Time:	05/22/2006 00:00	Analytical Method:	SW6010B

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	**Aluminum**	**2710**		**17.2**	**1**	**mg/kg**	**05/23/06**	**01:00**
2)	Antimony	0.62	JN	1.7	1	mg/kg	05/23/06	01:00
3)	**Arsenic**	**2.6**		**1.7**	**1**	**mg/kg**	**05/23/06**	**01:00**
4)	**Barium**	**8.1**		**0.43**	**1**	**mg/kg**	**05/23/06**	**01:00**
5)	Beryllium	0.11	JE	0.17	1	mg/kg	05/23/06	01:00
6)	Cadmium	BQL	U	0.52	1	mg/kg	05/23/06	01:00
7)	**Calcium**	**250**		**86.1**	**1**	**mg/kg**	**05/23/06**	**01:00**
8)	**Chromium**	**2.3**		**0.43**	**1**	**mg/kg**	**05/23/06**	**01:00**
9)	Cobalt	0.33	J	0.43	1	mg/kg	05/23/06	01:00
10)	Copper	0.28	J	0.86	1	mg/kg	05/23/06	01:00
11)	**Iron**	**1610**		**12.9**	**1**	**mg/kg**	**05/23/06**	**01:00**
12)	**Lead**	**1.3**		**0.86**	**1**	**mg/kg**	**05/23/06**	**01:00**
13)	**Magnesium**	**107**	**NE**	**21.5**	**1**	**mg/kg**	**05/23/06**	**01:00**
14)	**Manganese**	**7.3**	*	**0.43**	**1**	**mg/kg**	**05/23/06**	**01:00**
15)	Nickel	0.72	J	0.86	1	mg/kg	05/23/06	01:00
16)	**Potassium**	**94.5**	**NE**	**21.5**	**1**	**mg/kg**	**05/23/06**	**01:00**
17)	Selenium	BQL	U	1.7	1	mg/kg	05/23/06	01:00
18)	Silver	BQL	U	0.43	1	mg/kg	05/23/06	01:00
19)	Sodium	85.3	J	215	1	mg/kg	05/23/06	01:00
20)	Thallium	BQL	U	2.6	1	mg/kg	05/23/06	01:00
21)	**Vanadium**	**3.6**	**N**	**0.86**	**1**	**mg/kg**	**05/23/06**	**01:00**
22)	**Zinc**	**2.6**		**1.7**	**1**	**mg/kg**	**05/23/06**	**01:00**

Analytical Summary Report

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-SS-02	Lab Sample ID:	605117-002-002-1/1
Sample Date/Time:	05/18/2006 18:05	Percent Moisture:	5.54
Receipt Date/Time:	05/22/2006 08:09	Preparation Method:	SW7471_DIG
Prepared Date/Time:	05/22/2006 21:45	Analytical Method:	SW7471A

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	**Mercury**	**0.033**		**0.029**	**1**	**mg/kg**	**05/23/06**	**10:13**

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-SS-02	Lab Sample ID:	605117-002-002-1/1
Sample Date/Time:	05/18/2006 18:05	Percent Moisture:	5.54
Receipt Date/Time:	05/22/2006 08:09	Preparation Method:	NA
Prepared Date/Time:		Analytical Method:	CLP_SOLIDS

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	**Percent Solids**	**94**		**1.0**	**1**	**%**	**05/23/06**	**09:20**

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-SS-02-D	Lab Sample ID:	605117-003-003-1/1
Sample Date/Time:	05/18/2006 18:05	Percent Moisture:	5.42
Receipt Date/Time:	05/22/2006 08:09	Preparation Method:	SW3050B
Prepared Date/Time:	05/22/2006 00:00	Analytical Method:	SW6010B

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	**Aluminum**	**2930**		**16.1**	**1**	**mg/kg**	**05/23/06**	**01:08**
2)	Antimony	0.45	JN	1.6	1	mg/kg	05/23/06	01:08
3)	**Arsenic**	**1.7**		**1.6**	**1**	**mg/kg**	**05/23/06**	**01:08**
4)	**Barium**	**8.6**		**0.4**	**1**	**mg/kg**	**05/23/06**	**01:08**
5)	Beryllium	0.11	JE	0.16	1	mg/kg	05/23/06	01:08
6)	Cadmium	BQL	U	0.48	1	mg/kg	05/23/06	01:08
7)	**Calcium**	**468**		**80.7**	**1**	**mg/kg**	**05/23/06**	**01:08**
8)	**Chromium**	**2.7**		**0.4**	**1**	**mg/kg**	**05/23/06**	**01:08**
9)	**Cobalt**	**0.49**		**0.4**	**1**	**mg/kg**	**05/23/06**	**01:08**
10)	Copper	0.33	J	0.81	1	mg/kg	05/23/06	01:08
11)	**Iron**	**1670**		**12.1**	**1**	**mg/kg**	**05/23/06**	**01:08**
12)	**Lead**	**1.2**		**0.81**	**1**	**mg/kg**	**05/23/06**	**01:08**
13)	**Magnesium**	**144**	**NE**	**20.2**	**1**	**mg/kg**	**05/23/06**	**01:08**
14)	**Manganese**	**28.2**	*	**0.4**	**1**	**mg/kg**	**05/23/06**	**01:08**
15)	**Nickel**	**0.88**		**0.81**	**1**	**mg/kg**	**05/23/06**	**01:08**
16)	**Potassium**	**118**	**NE**	**20.2**	**1**	**mg/kg**	**05/23/06**	**01:08**
17)	Selenium	BQL	U	1.6	1	mg/kg	05/23/06	01:08
18)	Silver	BQL	U	0.4	1	mg/kg	05/23/06	01:08
19)	Sodium	72.7	J	202	1	mg/kg	05/23/06	01:08
20)	Thallium	BQL	U	2.4	1	mg/kg	05/23/06	01:08
21)	**Vanadium**	**4.0**	**N**	**0.81**	**1**	**mg/kg**	**05/23/06**	**01:08**
22)	**Zinc**	**2.8**		**1.6**	**1**	**mg/kg**	**05/23/06**	**01:08**

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-SS-02-D	Lab Sample ID:	605117-003-003-1/1
Sample Date/Time:	05/18/2006 18:05	Percent Moisture:	5.42
Receipt Date/Time:	05/22/2006 08:09	Preparation Method:	SW7471_DIG
Prepared Date/Time:	05/22/2006 21:45	Analytical Method:	SW7471A

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	**Mercury**	**0.053**		**0.031**	**1**	**mg/kg**	**05/23/06**	**10:15**

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-SS-02-D	Lab Sample ID:	605117-003-003-1/1
Sample Date/Time:	05/18/2006 18:05	Percent Moisture:	5.42
Receipt Date/Time:	05/22/2006 08:09	Preparation Method:	NA
Prepared Date/Time:		Analytical Method:	CLP_SOLIDS

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	**Percent Solids**	**94**		**1.0**	**1**	**%**	**05/23/06**	**09:20**

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-SS-04	Lab Sample ID:	605117-004-004-1/1
Sample Date/Time:	05/18/2006 18:10	Percent Moisture:	13.77
Receipt Date/Time:	05/22/2006 08:09	Preparation Method:	SW3050B
Prepared Date/Time:	05/22/2006 00:00	Analytical Method:	SW6010B

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	**Aluminum**	**3520**		**16.9**	**1**	**mg/kg**	**05/23/06**	**01:16**
2)	Antimony	0.59	JN	1.7	1	mg/kg	05/23/06	01:16
3)	**Arsenic**	**2.5**		**1.7**	**1**	**mg/kg**	**05/23/06**	**01:16**
4)	**Barium**	**8.9**		**0.42**	**1**	**mg/kg**	**05/23/06**	**01:16**
5)	Beryllium	0.14	JE	0.17	1	mg/kg	05/23/06	01:16
6)	Cadmium	BQL	U	0.51	1	mg/kg	05/23/06	01:16
7)	**Calcium**	**775**		**84.6**	**1**	**mg/kg**	**05/23/06**	**01:16**
8)	**Chromium**	**3.5**		**0.42**	**1**	**mg/kg**	**05/23/06**	**01:16**
9)	**Cobalt**	**0.55**		**0.42**	**1**	**mg/kg**	**05/23/06**	**01:16**
10)	Copper	0.54	J	0.85	1	mg/kg	05/23/06	01:16
11)	**Iron**	**1880**		**12.7**	**1**	**mg/kg**	**05/23/06**	**01:16**
12)	**Lead**	**1.9**		**0.85**	**1**	**mg/kg**	**05/23/06**	**01:16**
13)	**Magnesium**	**172**	**NE**	**21.2**	**1**	**mg/kg**	**05/23/06**	**01:16**
14)	**Manganese**	**18.9**	*	**0.42**	**1**	**mg/kg**	**05/23/06**	**01:16**
15)	**Nickel**	**0.99**		**0.85**	**1**	**mg/kg**	**05/23/06**	**01:16**
16)	**Potassium**	**127**	**NE**	**21.2**	**1**	**mg/kg**	**05/23/06**	**01:16**
17)	Selenium	0.20	J	1.7	1	mg/kg	05/23/06	01:16
18)	Silver	BQL	U	0.42	1	mg/kg	05/23/06	01:16
19)	Sodium	85.1	J	212	1	mg/kg	05/23/06	01:16
20)	Thallium	BQL	U	2.5	1	mg/kg	05/23/06	01:16
21)	**Vanadium**	**4.5**	**N**	**0.85**	**1**	**mg/kg**	**05/23/06**	**01:16**
22)	**Zinc**	**3.5**		**1.7**	**1**	**mg/kg**	**05/23/06**	**01:16**

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-SS-04	Lab Sample ID:	605117-004-004-1/1
Sample Date/Time:	05/18/2006 18:10	Percent Moisture:	13.77
Receipt Date/Time:	05/22/2006 08:09	Preparation Method:	SW7471_DIG
Prepared Date/Time:	05/22/2006 21:45	Analytical Method:	SW7471A

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	**Mercury**	**0.14**		**0.034**	**1**	**mg/kg**	**05/23/06**	**10:18**

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-SS-04	Lab Sample ID:	605117-004-004-1/1
Sample Date/Time:	05/18/2006 18:10	Percent Moisture:	13.77
Receipt Date/Time:	05/22/2006 08:09	Preparation Method:	NA
Prepared Date/Time:		Analytical Method:	CLP_SOLIDS

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	**Percent Solids**	**86**		**1.0**	**1**	**%**	**05/23/06**	**09:20**

Client Name:	Weston Solutions, Inc	Sample Matrix:	WATER
Client Sample ID:	WFFI-TCRA-TCLP-03	Lab Sample ID:	605117-005-005-1/2
Sample Date/Time:	05/19/2006 13:50	Percent Moisture:	5.48
Receipt Date/Time:	05/22/2006 08:09	Preparation Method:	SW5030B
Prepared Date/Time:	05/24/2006 10:32	Analytical Method:	SW8260B_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	1,1-Dichloroethene	BQL	U	100	10	ug/L	05/24/06	15:57
2)	1,2-Dichloroethane	BQL	U	100	10	ug/L	05/24/06	15:57
3)	1,4-Dichlorobenzene	BQL	U	100	10	ug/L	05/24/06	15:57
4)	2-Butanone	BQL	U	100	10	ug/L	05/24/06	15:57
5)	Benzene	BQL	U	100	10	ug/L	05/24/06	15:57
6)	Carbon Tetrachloride	BQL	U	100	10	ug/L	05/24/06	15:57
7)	Chlorobenzene	BQL	U	100	10	ug/L	05/24/06	15:57
8)	Chloroform	BQL	U	100	10	ug/L	05/24/06	15:57
9)	Tetrachloroethylene	100		100	10	ug/L	05/24/06	15:57
10)	Trichloroethene	BQL	U	100	10	ug/L	05/24/06	15:57
11)	Vinyl Chloride	BQL	U	100	10	ug/L	05/24/06	15:57

#	Surrogate Parameter	Percent Recovery	Control Limits	Dil Fact	Analysis Date/Time	
12)	1,2-Dichlorobenzene-d4	112 %	64 - 132	10	05/24/06	15:57
13)	1,2-Dichloroethane-d4	82 %	70 - 120	10	05/24/06	15:57
14)	4-Bromofluorobenzene	104 %	75 - 120	10	05/24/06	15:57
15)	Toluene-D8	90 %	85 - 120	10	05/24/06	15:57

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-03	Lab Sample ID:	605117-005-005-1/2
Sample Date/Time:	05/19/2006 13:50	Percent Moisture:	5.48
Receipt Date/Time:	05/22/2006 08:09	Preparation Method:	SW3510C
Prepared Date/Time:	05/23/2006 00:00	Analytical Method:	SW8270C_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	1,4-Dichlorobenzene	BQL	U	50	1	ug/L	05/23/06	20:50
2)	2,4,5-Trichlorophenol	BQL	U	50	1	ug/L	05/23/06	20:50
3)	2,4,6-Trichlorophenol	BQL	U	50	1	ug/L	05/23/06	20:50
4)	2,4-Dinitrotoluene	BQL	U	50	1	ug/L	05/23/06	20:50
5)	2-methylphenol	BQL	U	50	1	ug/L	05/23/06	20:50
6)	3 & 4-Methylphenol	BQL	U	50	1	ug/L	05/23/06	20:50
7)	Hexachlorobenzene	BQL	U	50	1	ug/L	05/23/06	20:50
8)	Hexachlorobutadiene	BQL	U	50	1	ug/L	05/23/06	20:50
9)	Hexachloroethane	BQL	U	50	1	ug/L	05/23/06	20:50
10)	Nitrobenzene	BQL	U	50	1	ug/L	05/23/06	20:50
11)	Pentachlorophenol	BQL	U	100	1	ug/L	05/23/06	20:50
12)	Pyridine	BQL	U	50	1	ug/L	05/23/06	20:50

#	Surrogate Parameter	Percent Recovery	Control Limits	Dil Fact	Analysis Date/Time	
13)	2,4,6-Tribromophenol	116 %	35 - 157	1	05/23/06	20:50
14)	2-Fluorobiphenyl	82 %	46 - 108	1	05/23/06	20:50
15)	2-Fluorophenol	44 %	28 - 116	1	05/23/06	20:50
16)	Nitrobenzene-d5	94 %	38 - 122	1	05/23/06	20:50
17)	Phenol-d5	35 %	34 - 118	1	05/23/06	20:50
18)	p-Terphenyl-d14	104 %	29 - 133	1	05/23/06	20:50

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-03	Lab Sample ID:	605117-005-005-1/2
Sample Date/Time:	05/19/2006 13:50	Percent Moisture:	5.48
Receipt Date/Time:	05/22/2006 08:09	Preparation Method:	SW3510C
Prepared Date/Time:	05/23/2006 00:00	Analytical Method:	SW8081A_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	Chlordane	BQL	U	5.0	1	ug/L	05/24/06	14:21
2)	Endrin	BQL	U	0.25	1	ug/L	05/24/06	14:21
3)	Gamma-BHC (Lindane)	BQL	U	0.25	1	ug/L	05/24/06	14:21
4)	Heptachlor	BQL	U	0.25	1	ug/L	05/24/06	14:21
5)	Heptachlor Epoxide	BQL	U	0.25	1	ug/L	05/24/06	14:21
6)	Methoxychlor	BQL	U	0.25	1	ug/L	05/24/06	14:21
7)	Toxaphene	BQL	U	5.0	1	ug/L	05/24/06	14:21

#	Surrogate Parameter	Percent Recovery	Control Limits	Dil Fact	Analysis Date/Time	
8)	Decachlorobiphenyl	77 %	16 - 155	1	05/24/06	14:21
9)	Decachlorobiphenyl	81 %	16 - 155	1	05/24/06	14:21
10)	Tetrachloro-m-xylene	83 %	6 - 154	1	05/24/06	14:21
11)	Tetrachloro-m-xylene	79 %	6 - 154	1	05/24/06	14:21

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-03	Lab Sample ID:	605117-005-005-1/2
Sample Date/Time:	05/19/2006 13:50	Percent Moisture:	5.48
Receipt Date/Time:	05/22/2006 08:09	Preparation Method:	EXT_SW8151
Prepared Date/Time:	05/23/2006 00:00	Analytical Method:	SW8151A_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	2,4,5-TP (Silvex)	BQL	U	5.0	1	ug/L	05/25/06	11:39
2)	2,4-D	BQL	U	5.0	1	ug/L	05/25/06	11:39

#	Surrogate Parameter	Percent Recovery	Control Limits	Dil Fact	Analysis Date/Time	
3)	2,4-DCAA	53 %	7 - 170	1	05/25/06	11:39
4)	2,4-DCAA	80 %	7 - 170	1	05/25/06	11:39

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-03	Lab Sample ID:	605117-005-005-1/2
Sample Date/Time:	05/19/2006 13:50	Percent Moisture:	5.48
Receipt Date/Time:	05/22/2006 08:09	Preparation Method:	SW3010A
Prepared Date/Time:	05/23/2006 00:00	Analytical Method:	SW6010B_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	Arsenic	BQL	U	200	1	ug/L	05/23/06	20:11
2)	Barium	BQL	U	1000	1	ug/L	05/23/06	20:11
3)	Cadmium	BQL	U	60	1	ug/L	05/23/06	20:11
4)	Chromium	BQL	U	50	1	ug/L	05/23/06	20:11
5)	Lead	BQL	U	100	1	ug/L	05/23/06	20:11
6)	Selenium	BQL	U	200	1	ug/L	05/23/06	20:11
7)	Silver	BQL	U	50	1	ug/L	05/23/06	20:11

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-03	Lab Sample ID:	605117-005-005-1/2
Sample Date/Time:	05/19/2006 13:50	Percent Moisture:	5.48
Receipt Date/Time:	05/22/2006 08:09	Preparation Method:	SW7470A_DIG
Prepared Date/Time:	05/23/2006 21:21	Analytical Method:	SW7471A_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	Mercury	BQL	U	2	1	ug/L	05/24/06	12:37

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-03	Lab Sample ID:	605117-005-005-1/2
Sample Date/Time:	05/19/2006 13:50	Percent Moisture:	5.48
Receipt Date/Time:	05/22/2006 08:09	Preparation Method:	NA
Prepared Date/Time:		Analytical Method:	CLP_SOLIDS

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	**Percent Solids**	**94**		**1.0**	**1**	**%**	**05/23/06**	**09:20**

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-03	Lab Sample ID:	605117-005-005-1/2
Sample Date/Time:	05/19/2006 13:50	Percent Moisture:	5.48
Receipt Date/Time:	05/22/2006 08:09	Preparation Method:	SW9014R
Prepared Date/Time:	05/22/2006 09:00	Analytical Method:	SW9014R

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time
1)	Cyanide, Reactive	BQL	U	0.020	1	mg/kg	05/22/06 16:00

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-03	Lab Sample ID:	605117-005-005-1/2
Sample Date/Time:	05/19/2006 13:50	Percent Moisture:	5.48
Receipt Date/Time:	05/22/2006 08:09	Preparation Method:	NA
Prepared Date/Time:		Analytical Method:	SW9034R

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	Sulfide, Reactive	BQL	U	9.5	1	mg/kg	05/22/06	11:15

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-DR1-5	Lab Sample ID:	605117-006-007-1/2
Sample Date/Time:	05/19/2006 14:20	Percent Moisture:	NA
Receipt Date/Time:	05/22/2006 08:09	Preparation Method:	SW3010A
Prepared Date/Time:	05/23/2006 00:00	Analytical Method:	SW6010B_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	Arsenic	BQL	U	200	1	ug/L	05/23/06	20:44
2)	Barium	BQL	U	1000	1	ug/L	05/23/06	20:44
3)	Cadmium	BQL	U	60	1	ug/L	05/23/06	20:44
4)	Chromium	BQL	U	50	1	ug/L	05/23/06	20:44
5)	**Lead**	**1230**		**100**	**1**	**ug/L**	**05/23/06**	**20:44**
6)	Selenium	BQL	U	200	1	ug/L	05/23/06	20:44
7)	Silver	BQL	U	50	1	ug/L	05/23/06	20:44

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-DR1-5	Lab Sample ID:	605117-006-007-1/2
Sample Date/Time:	05/19/2006 14:20	Percent Moisture:	NA
Receipt Date/Time:	05/22/2006 08:09	Preparation Method:	SW7470A_DIG
Prepared Date/Time:	05/23/2006 21:21	Analytical Method:	SW7471A_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	**Mercury**	**21.3**		**2**	**1**	**ug/L**	**05/24/06**	**12:39**

Qualifier Definitions

Weston Solutions, Inc

Work Order: 605117

All Departments

U	Indicates that the compound was analyzed for but not detected
BQL	Below Quantitation Limit

Organics

B	Indicates that the analyte was found in the associated blank as well as in the sample
D	Indicates that the analyte was reported from a diluted analysis
E	Indicates that the concentration detected exceeded the calibration range of the instrument
J	Value is less than the reporting limit but greater than the MDL
P	Indicates that there is greater than 25% difference for detected pesticide/Arochlor results between the two GC columns

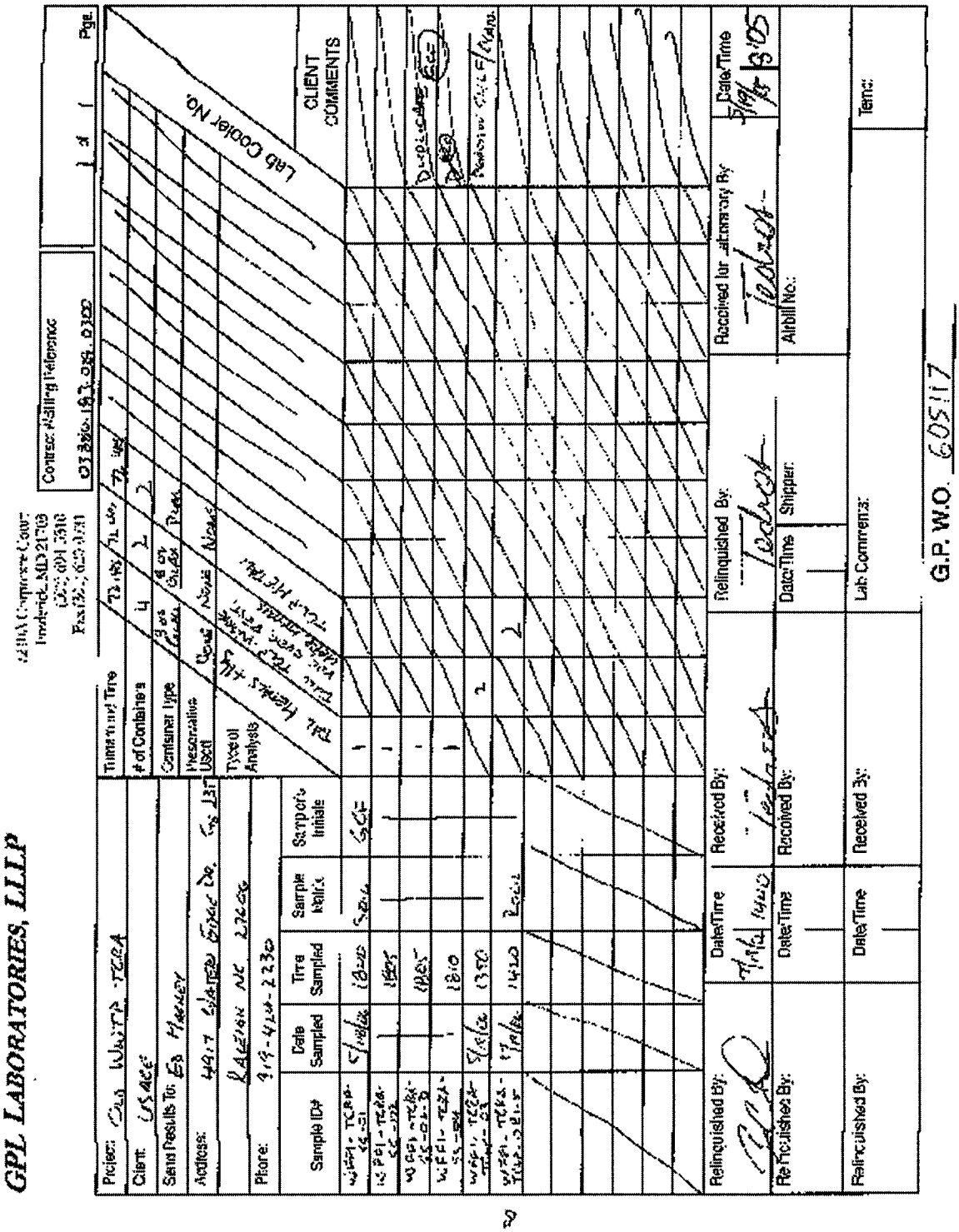
Metals

J	Indicates that the reported value was less than the reporting limit but greater than or equal to the IDL/MDL
E	Indicates that the reported value is estimated because of the possible presence of interference (i.e. the serial dilution not within control limits)
H	Indicates that the element was found in the associated blank as well as in the sample and the value is greater than or equal to the reporting limit
D	Indicates that the analyte was reported from a diluted analysis
N	Spiked sample recovery not within control limits
*	Duplicate analysis not within control limits

Chain of Custody

Weston Solutions, Inc

SDG: 605117



GPL Laboratories, LLLP

Figure 1
SAMPLE RECEIPT CHECKLIST

W.O. No: 605117
Client Name: Weston
Date Received: 05/12/06
Time Received: 08:05 am
Received By: Teles

Carrier Name: GPL
Prepared (Logged In) By: CJL 05/22/06 (Initials Date)
Project:
Site:
VOA Holding Blank I.D. No:

	YES	NO
Airbill/Manifest Present?		✓
No.		
Shipping Container in Good Condition?	✓	
Custody Seals Present on Shipping Container?	✓	
Condition: Broken		
Intact-not dated or signed		
Intact-dated and signed	✓	
Usage of Tamper Evident Type	✓	
Chain-of-Custody Present?	✓	
Chain-of-Custody Agrees with Sample Labels?	✓	
Chain-of-Custody Signed?	✓	
Packing Present in Shipping Container?	✓	
Type of Packing Bubble wrap		
Custody seals on Sample Bottles?		✓
Condition: Good		
Broken		
Total Number of Sample Bottles 8		
Total Number of Samples 6		
Samples Intact?	✓	
Sufficient Sample Volume for Indicated Test?	✓	

	YES	NO
Trip Blanks: No. of Sets		✓
Field Blanks: No. of Sets		✓
Equip Blank: No. of Sets		✓
Field Duplicate: No. of Sets 1	✓	
MS/MSD: No of Sets		✓
VOA Vials Have Zero Headspace?	N/A	
If yes, smaller or greater than a Green Pea	(see comments)	
Preservatives Added to Sample?		✓
pH Check Required?		✓
Performed By?		✓
Ice Present in Shipping Container?	✓	

Container #	Temp.	Container #	Temp.
	3°		

Project Manager Contacted?
Name: N/A
Date Contacted: 05/22/06

Any NO response must be detailed in the comments section below. If items are not applicable to particular samples or contracts, they should be marked N/A.

COMMENTS:

Checklist Completed By: Chris Lyons
Date: 05/22/06

SOP No: F-2V14

APPENDIX D.4

ANALYTICAL REPORT FOR 606061

Sample(s): WFF1-TCRA-TCLP-DR6-B (WFF1-TCRA-TCLP-DR6-8)

Analytical Report For 606061

for

Weston Solutions, Inc

Project Manager: Ed Mackey

Project Name: Wallops

GPL

Laboratories

GPL Laboratories, LLLP certifies that the test results meet all requirements of the NELAC Standards unless otherwise noted.

Reviewed By,
Project Manager

Approved By,
Laboratory Director

The Case Narrative, Chain of Custody, Sample Receipt Checklist, and the cover page of the Sample Analysis Report, are integral parts of GPL Laboratories' report package. If you did not receive all of these documents, please contact GPL immediately.

Sample Receipt

One solid sample was received on 06/09/2006. The sample wasdelivered by Federal Express. Sample receipt conditions and temperatures are documented on the Sample Receipt checklist.

Sample Analysis

One soil sample, submitted in encore samplers, and one water sample, were analyzed for BTEX compounds using the SW846 method 8260B.

One soil sample was analyzed for TCLP volatile organic compounds using the SW846 method 8260B.

The samples were analyzed within holding time.

All surrogate recoveries and internal standards responses were within the QC limits.

Matrix spike and matrix spike duplicate analyses were shared with work order 606012. Three spike recoveries were outside QC limits.

Two laboratory control sample reports were analyzed along with the samples batches. All spike recoveries were within QC limits.

BLK81912 is TCLP blank.

Manual integration was performed on some peaks that were improperly integrated by the software. The manually integrated compounds are designated by an "m" next to the area of the quantitation report, and chromatograms for these compounds were submitted with the package.

Metals

One soil sample was analyzed for total and TCLP mercury. EPA SW846 methods were used.

The soil and TCLP samples were reported on separate forms.

A matrix spike, and matrix spike duplicate were performed on the batch sample 606066-001 for mercury. They were within the control limits.

A matrix spike, and matrix spike duplicate were performed on the sample for TCLP mercury. They were within the control limits.

Calibration standards are verified against independent check standards purchased from a commercial vendor of environmental standards.

All GPL QA/QC criteria were met.

Reviewed By,
Project Manager

Approved By,
Laboratory Director

GPL Laboratories, LLLP

Sample Summary Report

Weston Solutions, Inc

Work Order: 606061

Client Sample ID	Lab Sample ID	Analytical Method	Matrix	Date Sampled	Date Recieved
WFFI-TCRA-TCLP-DR6-B	606061-001-001-1/2	SW7471A	SOIL	06/08/2006	06/09/2006
	606061-001-001-1/2	SW7471A_TCLP			
	606061-001-001-1/2	CLP_SOLIDS			

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-DR6-B	Lab Sample ID:	606061-001-001-1/2
Sample Date/Time:	06/08/2006 13:30	Percent Moisture:	.56
Receipt Date/Time:	06/09/2006 11:20	Preparation Method:	NA
Prepared Date/Time:		Analytical Method:	SW7471A

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	**Mercury**	**2120**	**D**	**93**	**4000**	**mg/kg**	**06/13/06**	**15:40**

Analytical Summary Report

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-DR6-B	Lab Sample ID:	606061-001-001-1/2
Sample Date/Time:	06/08/2006 13:30	Percent Moisture:	.56
Receipt Date/Time:	06/09/2006 11:20	Preparation Method:	SW7470A_DIG
Prepared Date/Time:	06/13/2006 17:00	Analytical Method:	SW7471A_TCLP

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	**Mercury**	**45.7**		**2**	**1**	**ug/L**	**06/14/06**	**14:16**

Analytical Summary Report

Client Name:	Weston Solutions, Inc	Sample Matrix:	SOIL
Client Sample ID:	WFFI-TCRA-TCLP-DR6-B	Lab Sample ID:	606061-001-001-1/2
Sample Date/Time:	06/08/2006 13:30	Percent Moisture:	.56
Receipt Date/Time:	06/09/2006 11:20	Preparation Method:	NA
Prepared Date/Time:		Analytical Method:	CLP_SOLIDS

#	Parameter	Reported Result	Q	Reporting Limit	Dil Fact	Units	Analysis Date/Time	
1)	**Percent Solids**	**99**		**1.0**	**1**	**%**	**06/14/06**	**15:42**

Qualifier Definitions

Weston Solutions, Inc

Work Order: 606061

All Departments

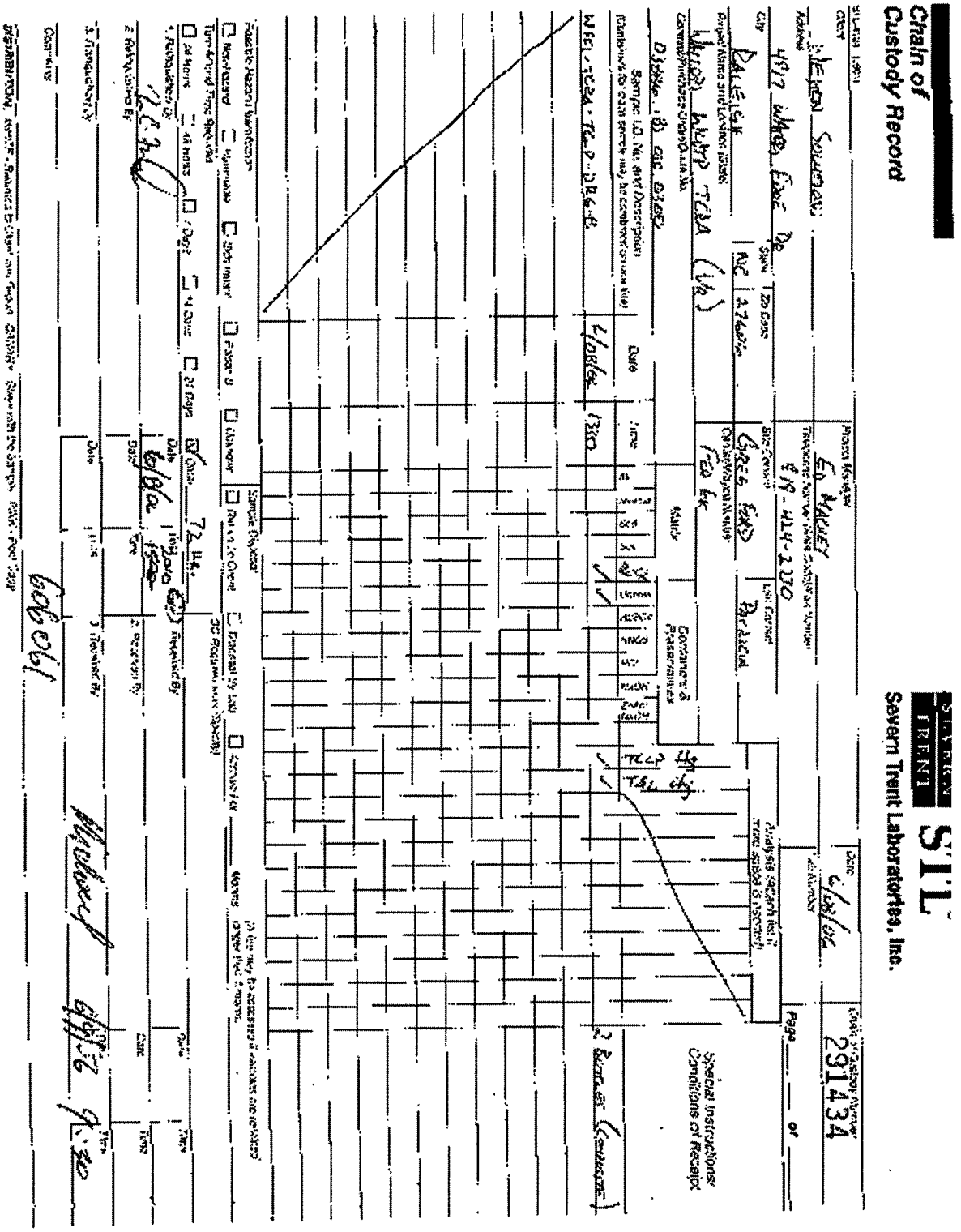
U	Indicates that the compound was analyzed for but not detected
BQL	Below Quantitation Limit

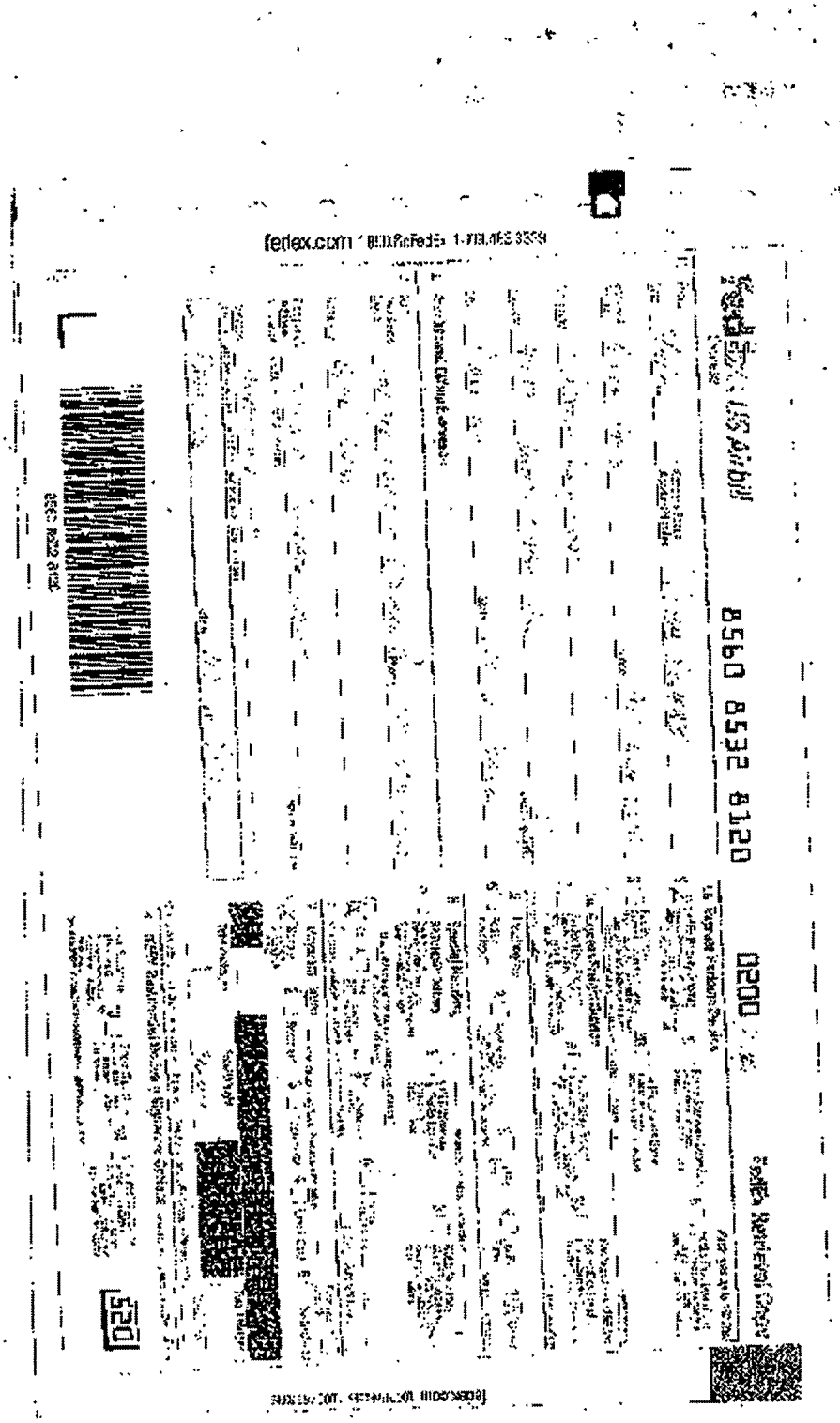
Organics

B	Indicates that the analyte was found in the associated blank as well as in the sample
D	Indicates that the analyte was reported from a diluted analysis
E	Indicates that the concentration detected exceeded the calibration range of the instrument
J	Value is less than the reporting limit but greater than the MDL
P	Indicates that there is greater than 25% difference for detected pesticide/Arochlor results between the two GC columns

Metals

J	Indicates that the reported value was less than the reporting limit but greater than or equal to the IDL/MDL
E	Indicates that the reported value is estimated because of the possible presence of interference (i.e. the serial dilution not within control limits)
H	Indicates that the element was found in the associated blank as well as in the sample and the value is greater than or equal to the reporting limit
D	Indicates that the analyte was reported from a diluted analysis
N	Spiked sample recovery not within control limits
*	Duplicate analysis not within control limits


Chain of Custody Record
Severn Trent Laboratories, Inc.
STL
2914134
Special Instructions/ Conditions of Receipt


fedex.com
8560 8532 8120
0200
D25

GPL Laboratories, LLLP

Figure 1
SAMPLE RECEIPT CHECKLIST

W.O. No: 606061
Client Name: Weston
Date Received: 6/9/06
Time Received: 9:30
Received By: MO

Carrier Name: FedEx
Prepared (Logged In) By: MO 6/9/06 (Initials Date)
Project:
Site:
VOA Holding Bank I.D. No.

	YES	NO
Airbill/Manifest Present?	✓	
No.		
Shipping Container in Good Condition?	✓	
Custody Seals Present on Shipping Container?	✓	
Condition: Broken		
Intact-not dated or signed		
Intact-dated and signed		
Usage of Tamper Evident Type	✓	
Chain-of-Custody Present?	✓	
Chain-of-Custody Agrees with Sample Labels?	✓	
Chain-of-Custody Signed?	✓	
Packing Present in Shipping Container?	✓	
Type of Packing		
Custody seals on Sample Bottles?	✓	
Condition: Good		
Broken		
Total Number of Sample Bottles 2		
Total Number of Samples 1		
Samples Intact?	✓	
Sufficient Sample Volume for Indicated Test?	✓	

	YES	NO
Trip Blanks: No. of Sets		✓
Field Blanks: No. of Sets		✓
Equip. Blank: No. of Sets		✓
Field Duplicate: No. of Sets		✓
MS/MSD: No of Sets		✓
VOA Vials Have Zero Headspace?		
If yes, smaller or greater than a Green Pea (see comments)		
Preservatives Added to Sample?		✓
pH Check Required?		✓
Performed By?		✓
Ice Present in Shipping Container?	✓	

Container #	Temp.	Container #	Temp.
1	2.0		
	MO		

Project Manager Contacted? Not
Name:
Date Contacted: 6/9/06

Any NO response must be detailed in the comments section below. If items are not applicable to particular samples or contracts, they should be marked N/A

COMMENTS:

Checklist Completed By: MO
Date: 6/9/06

SOP No. F.2V14

APPENDIX E

WASTE MANIFESTS AND DISPOSAL DOCUMENTATION

APPENDIX E.1

WEIGH TICKETS FOR ROLL-OFF CONTAINERS 1 THROUGH 10

368-41661 IMS ENVIRONMENTAL (NA-70)
ABANDONED WATER TREATMENT FACILITY WALLOPS ISLAND VA 23337
Ticket 176185 Driver code ASATC Requested by PER JWILLEY
Dump Info: Site ACN Tkt# 1034342 Tons 8.90 Tax .00 Cost
Load type DNR Equipment code 368 - 22 Points 0
Status Code * Additional comments exist for this ticket *

	Date	Time		Time
Dispatched:	6/02/2006	10:35	Arrived at customer:	10:57
Loaded / Drop off:		11:05	Stop Ticket:	
Restart Ticket:			Arrived at landfill:	11:20
Finished at landfill:		11:37	Ticket completed:	11:37

Svc	Quantity	Price	Special Description	Job #	Tax	T/P
DTN			DISPOSAL PER TON			T
30O			HAUL + DISPOSAL			T

368-41661 IMS ENVIRONMENTAL (NA-70)
ABANDONED WATER TREATMENT FACILITY WALLOPS ISLAND VA 23337
Ticket 176186 Driver code ASATC Requested by PER JWILLEY
Dump Info: Site ACN Tkt# 1034347 Tons 6.74 Tax .00 Cost
Load type DNR Equipment code 368 - 22 Points 0
Status Code * Additional comments exist for this ticket *

	Date	Time		Time
Dispatched:	6/02/2006	11:37	Arrived at customer:	11:50
Loaded / Drop off:		11:55	Stop Ticket:	
Restart Ticket:			Arrived at landfill:	12:15
Finished at landfill:		12:25	Ticket completed:	12:25

Svc	Quantity	Price	Special Description	Job #	Tax	T/P
DTN			DISPOSAL PER TON			T
30O			HAUL + DISPOSAL			T

368-41661 IMS ENVIRONMENTAL (NA-70)
ABANDONED WATER TREATMENT FACILITY WALLOPS ISLAND VA 23337
Ticket 176187 Driver code ASATC Requested by PER JWILLEY
Dump Info: Site ACN Tkt# 1034349 Tons 8.21 Tax .00 Cost
Load type DNR Equipment code 368 - 22 Points 0
Status Code * Additional comments exist for this ticket *

	Date	Time		Time
Dispatched:	6/02/2006	12:25	Arrived at customer:	12:50
Loaded / Drop off:		12:53	Stop Ticket:	
Restart Ticket:			Arrived at landfill:	13:05
Finished at landfill:		13:10	Ticket completed:	13:10

Svc	Quantity	Price	Special Description	Job #	Tax	T/P
DTN			DISPOSAL PER TON			T

368-41661 IMS ENVIRONMENTAL (NA-70)
ABANDONED WATER TREATMENT FACILITY WALLOPS ISLAND VA 23337
Ticket 176191 Driver code ASATC Requested by PER JWILLEY
Dump Info: Site ACN Tkt# 1034359 Tons 9.12 Tax .00 Cost
Load type DNR Equipment code 368 - 22 Points 0
Status Code * Additional comments exist for this ticket *

	Date	Time		Time
Dispatched:	6/02/2006	13:05	Arrived at customer:	13:20
Loaded / Drop off:		13:40	Stop Ticket:	
Restart Ticket:			Arrived at landfill:	13:55
Finished at landfill:		14:00	Ticket completed:	14:00

Svc	Quantity	Price	Special Description	Job #	Tax	T/P
DTN			DISPOSAL PER TON			T
30O			HAUL + DISPOSAL			T

368-41661 IMS ENVIRONMENTAL (NA-70)
ABANDONED WATER TREATMENT FACILITY WALLOPS ISLAND VA 23337
Ticket 176182 Driver code KJUBI Requested by PER JWILLEY
Dump Info: Site ACN Tkt# 1034272 Tons 10.29 Tax .00 Cost
Load type DNR Equipment code 368 - 22 Points 0
Status Code * Additional comments exist for this ticket *

	Date	Time		Time
Dispatched:	6/01/2006	9:50	Arrived at customer:	10:18
Loaded / Drop off:		10:22	Stop Ticket:	
Restart Ticket:			Arrived at landfill:	10:37
Finished at landfill:		10:56	Ticket completed:	10:56

Svc	Quantity	Price	Special Description	Job #	Tax	T/P
DTN			DISPOSAL PER TON			T
30O			HAUL + DISPOSAL			T

368-41661 IMS ENVIRONMENTAL (NA-70)
ABANDONED WATER TREATMENT FACILITY WALLOPS ISLAND VA 23337
Ticket 176184 Driver code KJUBI Requested by JWILLEY
Dump Info: Site ACN Tkt# 1034286 Tons 8.63 Tax .00 Cost
Load type DNR Equipment code 368 - 22 Points 0
Status Code * Additional comments exist for this ticket *

	Date	Time		Time
Dispatched:	6/01/2006	12:01	Arrived at customer:	12:23
Loaded / Drop off:		12:29	Stop Ticket:	
Restart Ticket:			Arrived at landfill:	12:42
Finished at landfill:		13:01	Ticket completed:	13:01

Svc	Quantity	Price	Special Description	Job #	Tax	T/P
DTN			DISPOSAL PER TON			T

368-41661 IMS ENVIRONMENTAL (NA-70)
ABANDONED WATER TREATMENT FACILITY WALLOPS ISLAND VA 23337
Ticket 176188 Driver code KJUBI Requested by PER JWILLEY
Dump Info: Site ACN Tkt# 1034296 Tons 7.49 Tax .00 Cost
Load type DNR Equipment code 368 - 22 Points 0
Status Code * Additional comments exist for this ticket *

	Date	Time		Time
Dispatched:	6/01/2006	13:01	Arrived at customer:	13:20
Loaded / Drop off:		13:24	Stop Ticket:	
Restart Ticket:			Arrived at landfill:	13:38
Finished at landfill:		13:48	Ticket completed:	13:48

Svc	Quantity	Price	Special Description	Job #	Tax T/P
DTN			DISPOSAL PER TON		T
30O			HAUL + DISPOSAL		T

368-41661 IMS ENVIRONMENTAL (NA-70)
ABANDONED WATER TREATMENT FACILITY WALLOPS ISLAND VA 23337
Ticket 176189 Driver code KJUBI Requested by PER JWILLEY
Dump Info: Site ACN Tkt# 1034310 Tons 6.72 Tax .00 Cost
Load type DNR Equipment code 368 - 22 Points 0
Status Code * Additional comments exist for this ticket *

	Date	Time		Time
Dispatched:	6/01/2006	13:48	Arrived at customer:	14:08
Loaded / Drop off:		14:11	Stop Ticket:	
Restart Ticket:			Arrived at landfill:	14:25
Finished at landfill:		14:34	Ticket completed:	14:34

Svc	Quantity	Price	Special Description	Job #	Tax T/P
DTN			DISPOSAL PER TON		T
30O			HAUL + DISPOSAL		T

368-41661 IMS ENVIRONMENTAL (NA-70)
ABANDONED WATER TREATMENT FACILITY WALLOPS ISLAND VA 23337
Ticket 176181 Driver code ASATC Requested by PER JWILLEY
Dump Info: Site ACN Tkt# 1034192 Tons 12.38 Tax .00 Cost
Load type DNR Equipment code 368 - 22 Points 0
Status Code * Additional comments exist for this ticket *

	Date	Time		Time
Dispatched:	5/31/2006	7:20	Arrived at customer:	7:40
Loaded / Drop off:		8:25	Stop Ticket:	
Restart Ticket:			Arrived at landfill:	8:40
Finished at landfill:		9:15	Ticket completed:	9:15

Svc	Quantity	Price	Special Description	Job #	Tax T/P

DTN	DISPOSAL PER TON	T
30O	HAUL + DISPOSAL	T

368-41661 IMS ENVIRONMENTAL (NA-70)
ABANDONED WATER TREATMENT FACILITY WALLOPS ISLAND VA 23337
Ticket 176183 Driver code KJUBI Requested by PER JWILLEY
Dump Info: Site ACN Tkt# 1034257 Tons 12.94 Tax .00 Cost
Load type DNR Equipment code 368 - 22 Points 0
Status Code * Additional comments exist for this ticket *

	Date	Time		Time
Dispatched:	5/31/2006	15:17	Arrived at customer:	15:25
Loaded / Drop off:		15:30	Stop Ticket:	
Restart Ticket:			Arrived at landfill:	15:44
Finished at landfill:		15:59	Ticket completed:	15:59

Svc	Quantity	Price	Special Description	Job #	Tax	T/P
DTN			DISPOSAL PER TON			T
30O			HAUL + DISPOSAL		T	

APPENDIX E.2

DISPOSAL DOCUMENTS FOR 85-GALLON DRUM, DRUMS 6 THROUGH 8, AND PPE DRUMS

CERTIFICATE of DISPOSAL

This is to certify that Rock Contaminated w/ Mercury, Mercury Seal, and PPE Contaminated w/ Mercury *waste received* 7/17/06 from USACE-Norfolk District on *manifest #* PAH277353 *has been disposed of according to applicable federal and state regulations.*

Stream#: YS3810, YS3811, YS3812

D. Thomas Yablecki

President

Envirite of Pennsylvania, Inc.

730 Vogelsong Road
York, PA 17404

PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Land Recycling and Waste Management
P.O. Box 8550
Harrisburg, PA 17105-8550
OFFICIAL PENNSYLVANIA MANIFEST FORM

2560-FM-LRWM0051 REV. 7/99

Form approved.
OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. VAR000509240 | Manifest Document No. 01353 | 2. Page 1 of 1 | Information within the bold red border is not required by Federal law but may be required by State law.

3. Generator's Name and Mailing Address
USACE-Norfolk District
WALLOPS FLIGHT FACILITY
WALLOPS ISLAND, VA 23337
4. Generator's Phone (804) 239-0968

A. State Manifest Document Number: PAH 277353
B. State Gen. ID:

5. Transporter 1 Company Name: Envirite of Pennsylvania, Inc. | 6. US EPA ID Number: PAD010154045
C. State Trans. ID: PA-AH 0549

7. Transporter 2 Company Name | 8. US EPA ID Number
D. Transporter's Phone (717) 846-1900

9. Designated Facility Name and Site Address
Envirite of Pennsylvania, Inc.
730 Vogelsong Road
York, PA 17404
10. US EPA ID Number: PAD010154045
E. State Trans. ID: PA-AH
F. Transporter's Phone ( )
G. State Facility's ID
H. Facility's Phone (717) 846-1900

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number) HM	12. Containers No.	Type	13. Total Quantity	Unit Wt/Vol	I. Waste No.
a. X RQ Hazardous waste, solid, n.o.s., (mercury) 9, NA3077, III (D009) SOLID	003	DM	EST 01800	P	D009
b. ~~X RQ Hazardous waste mercury, n.o.s., 9, NA3077, III (D009)~~ (MERCURY) (JEM)					D009 JEM
c. X RQ Hazardous waste solid, n.o.s., (mercury), 9, NA3077, III (D009)	003	DM	EST 00300	P	D009
d. X RQ, WASTE MERCURY, (CONTAINED IN MANUFACTURED ARTICLES), 8, UN2809, III, (D009)	001 ~~003~~ JEM	DM	EST 00300	P	D009

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above
a. SOL | c. SOL
b. | d. SOL

15. Special Handling Instructions and Additional Information
a) ERG#: 171 YS#3810 b) ~~ERG#: 171~~ ERG#: 171 YS#3811 c) ERG#: 171 YS#3812
24 Hour Emergency Response Phone #: 757 363-6002

#3A, C & D ARE ESTIMATES

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month	Day	Year
Robert Neal		10	17	06

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
JAMES E. MILLER, JR.		10	19	06

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space
A. 1910 #
C. 209 #
D. 427 #
PER ENVIRITE SCALE

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name	Signature	Month	Day	Year
KEN G. HENSHAW		10	17	06

GENERATOR
TRANSPORTER
FACILITY

PAH 277353

EPA Form 8700-22 (Rev. 9/88) Previous editions are obsolete

WASTE PROFILE INFORMATION FORM

ENVIRITE of PENNSYLVANIA, INC.

If you need help with this form, please consult your Envirite Technical Marketing Representative, call Customer Service at 717-846-1900 or refer to Instructions for Completing Waste Profile Information Form

I. CUSTOMER INFORMATION:

a. Generator Name: USACE-Norfolk District
b. SIC: 9999
c. Facility Address: Wallops Flight Facility, Wallops Island, VA 23337
d. Pickup Address: Same as above
e. Generator USEPA ID: VAR000509240
f. Generator State ID: n/a
g. Technical Contact: Matt Gemmell (CESI)
h. Title: Business Manager
i. Phone: 804-239-0968
j. Fax: 804-798-3326
k. Emergency Contact: Same as above
l. After hours Phone:

II. INVOICING INFORMATION:

a. Generator Facility ☐ Same as above (If different, please complete the following) **PO Required?** ☐ YES ☐ NO
b. Company Name: Capitol Environmental Services, Inc.
c. Address: PO Box 130 Kensington MD 20895
d. Contact: Amy Moser
e. Phone: 302-652-8999
f. Fax:
g. Quote to Contact: Matt Gemmell
h. Phone: 804-239-0968
i. email address:

III. WASTE INFORMATION:

a. Generator Description/Waste common name: Mercury Seal
b. Process generating waste (Please describe **in detail** the process which generates this waste):
Removal of mercury containing equipment

ESTIMATED SHIPMENT FREQUENCY: ☒ 1x ☐ weekly ☐ monthly ☐ quarterly ☐ semi-annually ☐ yearly

other

ESTIMATED VOLUME per SHIPMENT: 1 ☐ gallons ☐ tons ☐ pounds ☐ cubic yards ☐ bags ☒ drums ☐ boxes

PROCESS SCHEMATIC SKETCH: *(Required for PADEP waste module approval. Please provide rough sketch or attach drawing.)*

IV. PHYSICAL CHARACTERISTICS OF WASTE

a. Physical state @ 20°C(68°F)	b. Color	d. Phases	f. pH Range	g. Flash Point	h. Free Liquid (EPA SW-846, Method 9095)
☒ Solid ☐ Powder ☐ Wood ☐ Liquid	black c. Obvious Odor n/a	☒ Single ☐ Double ☐ Multi e. Oil/Grease n/a %	☐ ≤ 2 ☐ >2 - 4.9 ☒ 5 - 9.9 ☐ 10 - 12.4 ☐ ≥ 12.5	☐ < 100°F ☐ 100 - 139°F ☐ > 140°F ☒ > 200°F	☐ Yes ☒ No

i. Does this waste produce any explosive, combustible or toxic gases upon neutralization with lime? ☐ Yes ☐ No

Comments:

BOXED AREA FOR ENVIRITE USE ONLY

STREAM NUMBER DATE RECEIVED DATE NEEDED

TMR ANALYSIS REQUESTED: NEW ☐ RECERTIFICATION ☐ OTHER

If you need help with this form, please consult your Envirite Technical Marketing Representative, call Customer Service at 717-848-1900 or refer to Instructions for Completing Waste Profile Information Form.

V.CHEMICAL COMPOUNDS OR ELEMENTS

a. Please specify chemicals:	Range:		
Equipment containing metallic mercury	100	- 100	%
		-	%
		-	%
		-	%
		-	%
Total in right column must be > or = 100%	TOTAL		%

b. Indicate if any of the following apply to this waste:

- ☐ Radioactive
- ☐ Asbestos
- ☐ Dioxins
- ☐ Pyrophoric waste
- ☐ Shock sensitive waste
- ☐ Medical waste
- ☐ Crystalline-free silica
- ☐ Pesticides
- ☐ Herbicides
- ☐ Insecticides
- ☐ PCB's
- ☒ **NONE in this section present**

VI. HAZARDS INFORMATION

a. Identify all EPA RCRA **Listed** hazardous waste numbers which apply

☐ F006	☐ F009	☐ F019	☐ K004	☐ K007	☐ Other	☐ Applicable State codes	
☐ F007	☐ F011	☐ K002	☐ K005	☐ K008			
☐ F008	☐ F012	☐ K003	☐ K006	☐ K062			

b. EPA RCRA **Characteristic** hazardous waste numbers

☐ D001 (Oxidizer) ☐ D002 (Corrosive) ☐ D003 (Reactive) (Cyanide ≥ 250 OR Sulfide ≥ 500) - *Specify:*

***** ADDRESS EACH ENTRY *****

Code	Constituent	Regulatory level TCLP (mg/l)			Actual (if >)
D004	Arsenic	☐ <	5	≥ ☐	
D005	Barium	☐ <	100	≥ ☐	
D006	Cadmium	☐ <	1	≥ ☐	
D007	Chromium	☐ <	5	≥ ☐	
D008	Lead	☐ <	5	≥ ☐	
D009	Mercury	☐ <	0.2	≥ ☒	
D010	Selenium	☐ <	1	≥ ☐	
D011	Silver	☐ <	5	≥ ☐	
D012	Endrin	☐ <	0.02	≥ ☐	
D013	Lindane	☐ <	0.4	≥ ☐	
D014	Methoxychlor	☐ <	10	≥ ☐	
D015	Toxaphene	☐ <	0.5	≥ ☐	
D016	2,4-D	☐ <	10	≥ ☐	
D017	2,4,5-TP(Silvex)	☐ <	1	≥ ☐	
D018	Benzene	☐ <	0.5	≥ ☐	
D019	Carbon tetrachloride	☐ <	0.5	≥ ☐	
D020	Chlordane	☐ <	0.03	≥ ☐	
D021	Chlorobenzene	☐ <	100	≥ ☐	
D022	Chloroform	☐ <	6.0	≥ ☐	

Code	Constituent	Regulatory level TCLP(mg/l)			Actual (if >)
D024	m-Cresol	☐ <	200	≥ ☐	
D025	p-Cresol	☐ <	200	≥ ☐	
D026	Total Cresols	☐ <	200	≥ ☐	
D027	1,4-Dichlorobenzene	☐ <	7.5	≥ ☐	
D028	1,2-Dichloroethane	☐ <	0.5	≥ ☐	
D029	1,1-Dichloroethylene	☐ <	0.7	≥ ☐	
D030	2,4-Dinitrotoluene	☐ <	0.13	≥ ☐	
D031	Heptachlor	☐ <	0.008	≥ ☐	
D032	Hexachlorobenzene	☐ <	0.13	≥ ☐	
D033	Hexachlorobutadiene	☐ <	0.5	≥ ☐	
D034	Hexachloroethane	☐ <	3.0	≥ ☐	
D035	Methyl Ethyl Ketone	☐ <	200	≥ ☐	
D036	Nitrobenzene	☐ <	2	≥ ☐	
D037	Pentachlorophenol	☐ <	100	≥ ☐	
D038	Pyridine	☐ <	5	≥ ☐	
D039	Tetrachloroethylene	☐ <	0.7	≥ ☐	
D040	Trichloroethylene	☐ <	0.5	≥ ☐	
D041	2,4,5-Trichlorophenol	☐ <	400	≥ ☐	
D042	2,4,6-Trichlorophenol	☐ <	2	≥ ☐	

If you need help with this form, please consult your Envirite Technical Marketing Representative, call Customer Service at 717-846-1900 or refer to Instructions for Completing Waste Profile Information Form.

D023	o-Cresol	☐ <	200	≥ ☐		D043	Vinyl chloride	< ☐ 0.2 ≥ ☐

c.

Does this waste contain Underlying Hazardous Constituents (D-code wastes) ?	☐ Yes	☒ No	If yes, complete section VII
Does this waste contain Total VOC's at or above 500 ppmw?	☐ Yes	☒ No	
Per the LDR program's definition, this waste is a	☐ Wastewater†	☒ Nonwastewater**	

† "Wastewaters" are wastes that contain less than 1% total organic carbon (TOC) and less than 1% total suspended solids (Nonfilterable Residues Test — Method No. 160.2 Methods for Chemical Analysis of Water and Wastes, EPA — 600/4-7-020, March 1983).

** *"Nonwastewaters" are those wastes that do not meet the definition of "Wastewaters."*

If you need help with this form, please consult your Envirite Technical Marketing Representative, call Customer Service at 717-848-1900 or refer to Instructions for Completing Waste Profile Information Form.

VII. UNDERLYING HAZARDOUS CONSTITUENTS (List all hazardous constituents - attach additional sheets if necessary)

Constituent	Concentration	mg/kg or mg/L
n/a		

Constituent	Concentration	mg/kg or mg/L

VIII. SHIPPING INFORMATION:

Proper DOT Shipping Name RQ, Hazardous Waste Solid, N.O.S.

(include technical names in parenthesis where applicable, in accordance with 49CFR 172.203(k))

Technical name(s): Equipment containing Mercury

DOT Hazard Class 9 DOT Identification No. NA3077 Packing Group III

SECTION IX. SAMPLING INFORMATION:

Please submit sample promptly. Organic analyses must be completed within 14 days of sample collection; otherwise, resampling will be necessary.

Date of Sampling: _____ Time of Sampling: _____ ☐ AM ☐ PM (please check one)

Samplers Signature _____ Samplers Name _____

Title and Affiliation of Sampler _____

X. AUTHORIZATION/ CERTIFICATION:

This form must be signed by a person authorized to represent the generator. If the individual signing the Waste Profile is a broker or other agent not employed by the generator of the waste, the generator must provide written notification (on generator letterhead) of authority granted that individual. It is understood that persons identified as Primary, Technical, or Emergency Contact have been granted such authority by the generator.

I authorize Envirite of Pennsylvania to make corrections to this waste approval file. I understand this will require my verbal permission, and that I will be given written confirmation of any changes.

Signature _____

I hereby avow that any pertinent information that is known by the generator concerning possible hazards has been disclosed. I certify that, to the best of my knowledge, all statements and attachments are correct and accurate representations of this waste material. I authorize Envirite of Pennsylvania to obtain a sample from any waste shipment for the purposes of recertification.

Signature _____ Title Env. Engineer ACOE

Name Robert Neal (Please print) Date 7/6/06

All information on this form and its attachments will be kept confidential within the limits of existing environmental laws and regulations. We suggest that you retain a copy of this form and its attachments for your records.
0200

WASTE PROFILE INFORMATION FORM

ENVIRITE of PENNSYLVANIA, INC.

If you need help with this form, please consult your Envirite Technical Marketing Representative, call Customer Service at 717-846-1900 or refer to Instructions for Completing Waste Profile Information Form

I. CUSTOMER INFORMATION:

a. Generator Name: USACE-Norfolk District b. SIC: 9999
c. Facility Address: Wallops Flight Facility, Wallops Island, VA 23337
d. Pickup Address: Same as above
e. Generator USEPA ID: VAR000509240 f. Generator State ID: n/a
g. Technical Contact: Matt Gemmell (CESI) h. Title: Business Manager
i. Phone: 804-239-0968 j. Fax: 804-798-3326
k. Emergency Contact: Same as above l. After hours Phone:

II. INVOICING INFORMATION:

a. Generator Facility ☐ Same as above (If different, please complete the following) **PO Required?** ☐ YES ☐ NO
b. Company Name: Capitol Environmental Services, Inc.
c. Address: PO Box 130 Kensington MD 20895
d. Contact: Amy Moser e. Phone: 302-652-8999 f. Fax:
g. Quote to Contact: Matt Gemmell h. Phone: 804-239-0968 i. email address:

III. WASTE INFORMATION:

a. Generator Description/Waste common name: PPE contaminated with Mercury
b. Process generating waste (Please describe **in detail** the process which generates this waste):
Remediation

ESTIMATED SHIPMENT FREQUENCY: ☒ 1x ☐ weekly ☐ monthly ☐ quarterly ☐ semi-annually ☐ yearly

other

ESTIMATED VOLUME per SHIPMENT: 2 ☐ gallons ☐ tons ☐ pounds ☐ cubic yards ☐ bags ☒ drums ☐ boxes

PROCESS SCHEMATIC SKETCH: *(Required for PADEP waste module approval. Please provide rough sketch or attach drawing.)*

IV. PHYSICAL CHARACTERISTICS OF WASTE

a. Physical state @ 20°C(68°F)	b. Color	c. Obvious Odor	d. Phases	e. Oil/Grease	f. pH Range	g. Flash Point	h. Free Liquid (EPA SW-846, Method 9095)
☒ Solid	various	none	☒ Single	n/a %	☐ ≤ 2	☐ < 100°F	☐ Yes
☐ Powder			☐ Double		☐ >2 - 4.9	☐ 100 - 139°F	☒ No
☐ Wood			☐ Multi		☒ 5 - 9.9	☐ > 140°F	
☐ Liquid					☐ 10 - 12.4	☒ > 200°F	
					☐ ≥ 12.5		

i. Does this waste produce any explosive, combustible or toxic gases upon neutralization with lime? ☐ Yes ☐ No

Comments:

BOXED AREA FOR ENVIRITE USE ONLY

STREAM NUMBER DATE RECEIVED DATE NEEDED
TMR ANALYSIS REQUESTED: NEW ☐ RECERTIFICATION ☐ OTHER

If you need help with this form, please consult your Envirite Technical Marketing Representative, call Customer Service at 717-848-1900 or refer to Instructions for Completing Waste Profile Information Form.

V. CHEMICAL COMPOUNDS OR ELEMENTS

a. Please specify chemicals:	Range:		
PPE including tyvek, filters, plastic	99.9	- 99.99	%
Metallic Mercury	0.01	- 0.1	%
		-	%
		-	%
			%
Total in right column must be > or = 100%	TOTAL		%

b. Indicate if any of the following apply to this waste:

- ☐ Radioactive
- ☐ Asbestos
- ☐ Dioxins
- ☐ Pyrophoric waste
- ☐ Shock sensitive waste
- ☐ Medical waste
- ☐ Crystalline-free silica
- ☐ Pesticides
- ☐ Herbicides
- ☐ Insecticides
- ☐ PCB's
- ☒ **NONE in this section present**

VI. HAZARDS INFORMATION

a. Identify all EPA RCRA **Listed** hazardous waste numbers which apply

☐ F006	☐ F009	☐ F019	☐ K004	☐ K007	☐ Other	☐ Applicable State codes
☐ F007	☐ F011	☐ K002	☐ K005	☐ K008		
☐ F008	☐ F012	☐ K003	☐ K006	☐ K062		

b. EPA RCRA **Characteristic** hazardous waste numbers

☐ D001 (Oxidizer) ☐ D002 (Corrosive) ☐ D003 (Reactive) (Cyanide ≥ 250 OR Sulfide ≥ 500) - ***Specify:***

***** ADDRESS EACH ENTRY *****

Code	Constituent	Regulatory level TCLP (mg/l)			Actual (if >)
D004	Arsenic	☐ <	5	≥ ☐	
D005	Barium	☐ <	100	≥ ☐	
D006	Cadmium	☐ <	1	≥ ☐	
D007	Chromium	☐ <	5	≥ ☐	
D008	Lead	☐ <	5	≥ ☐	
D009	Mercury	☒ <	0.2	≥ ☐	
D010	Selenium	☐ <	1	≥ ☐	
D011	Silver	☐ <	5	≥ ☐	
D012	Endrin	☐ <	0.02	≥ ☐	
D013	Lindane	☐ <	0.4	≥ ☐	
D014	Methoxychlor	☐ <	10	≥ ☐	
D015	Toxaphene	☐ <	0.5	≥ ☐	
D016	2,4-D	☐ <	10	≥ ☐	
D017	2,4,5-TP(Silvex)	☐ <	1	≥ ☐	
D018	Benzene	☐ <	0.5	≥ ☐	
D019	Carbon tetrachloride	☐ <	0.5	≥ ☐	
D020	Chlordane	☐ <	0.03	≥ ☐	
D021	Chlorobenzene	☐ <	100	≥ ☐	
D022	Chloroform	☐ <	6.0	≥ ☐	

Code	Constituent	Regulatory level TCLP(mg/l)			Actual (if >)
D024	m-Cresol	☐	200	≥ ☐	
D025	p-Cresol	☐	200	≥ ☐	
D026	Total Cresols	☐	200	≥ ☐	
D027	1,4-Dichlorobenzene	☐	7.5	≥ ☐	
D028	1,2-Dichloroethane	☐	0.5	≥ ☐	
D029	1,1-Dichloroethylene	☐	0.7	≥ ☐	
D030	2,4-Dinitrotoluene	☐	0.13	≥ ☐	
D031	Heptachlor	☐	0.008	≥ ☐	
D032	Hexachlorobenzene	☐	0.13	≥ ☐	
D033	Hexachlorobutadiene	☐	0.5	≥ ☐	
D034	Hexachloroethane	☐	3.0	≥ ☐	
D035	Methyl Ethyl Ketone	☐	200	≥ ☐	
D036	Nitrobenzene	☐	2	≥ ☐	
D037	Pentachlorophenol	☐	100	≥ ☐	
D038	Pyridine	☐	5	≥ ☐	
D039	Tetrachloroethylene	☐	0.7	≥ ☐	
D040	Trichloroethylene	☐	0.5	≥ ☐	
D041	2,4,5-Trichlorophenol	☐	400	≥ ☐	
D042	2,4,6-Trichlorophenol	☐	2	≥ ☐	

If you need help with this form, please consult your Envirite Technical Marketing Representative, call Customer Service at 717-848-1900 or refer to Instructions for Completing Waste Profile Information Form.

D023	o-Cresol	☐ <	200	≥ ☐	D043	Vinyl chloride	☐ < 0.2 ≥ ☐

C.

Does this waste contain Underlying Hazardous Constituents (D-code wastes) ?	☐ Yes	☒ No	If yes, complete section VII
Does this waste contain Total VOC's at or above 500 ppmw?	☐ Yes	☒ No	
Per the LDR program's definition, this waste is a	☐ Wastewater†	☒ Nonwastewater""	

† "Wastewaters" are wastes that contain less than 1% total organic carbon (TOC) and less than 1% total suspended solids (Nonfilterable Residues Test — Method No. 160.2 Methods for Chemical Analysis of Water and Wastes, EPA — 600/4-7-020, March 1983).

"" *"Nonwastewaters" are those wastes that do not meet the definition of "Wastewaters."*

If you need help with this form, please consult your Envirite Technical Marketing Representative, call Customer Service at 717-848-1900 or refer to Instructions for Completing Waste Profile Information Form.

VII. UNDERLYING HAZARDOUS CONSTITUENTS (List all hazardous constituents - attach additional sheets if necessary)

Constituent	Concentration	mg/kg or mg/L	Constituent	Concentration	mg/kg or mg/L
n/a					

VIII. SHIPPING INFORMATION:

Proper DOT Shipping Name Hazardous Waste Solid, N.O.S. (D009)

(include technical names in parenthesis where applicable, in accordance with 49CFR 172.203(k))

Technical name(s): _____

DOT Hazard Class 9 DOT Identification No. NA3077 Packing Group III

SECTION IX. SAMPLING INFORMATION:

Please submit sample promptly. Organic analyses must be completed within 14 days of sample collection; otherwise, resampling will be necessary.

Date of Sampling: _____ Time of Sampling: _____ ☐ AM ☐ PM (please check one)

Samplers Signature _____ Samplers Name _____

Title and Affiliation of Sampler _____

X. AUTHORIZATION/ CERTIFICATION:

*This form must be signed by a person authorized to represent the generator. If the individual signing the Waste Profile is a broker or other agent not employed by the generator of the waste, the generator **must provide written notification** (on generator letterhead) of authority granted that individual. It is understood that persons identified as Primary, Technical, or Emergency Contact have been granted such authority by the generator.*

I authorize Envirite of Pennsylvania to make corrections to this waste approval file. I understand this will require my verbal permission, and that I will be given written confirmation of any changes.

Signature _____

I hereby avow that any pertinent information that is known by the generator concerning possible hazards has been disclosed. I certify that, to the best of my knowledge, all statements and attachments are correct and accurate representations of this waste material. I authorize Envirite of Pennsylvania to obtain a sample from any waste shipment for the purposes of recertification.

Signature _____ Title Env. Engineer ACOE

Name Robert Reali (Please print) Date 7/6/06

All information on this form and its attachments will be kept confidential within the limits of existing environmental laws and regulations. We suggest that you retain a copy of this form and its attachments for your records.
0200

WASTE PROFILE INFORMATION FORM

ENVIRITE of PENNSYLVANIA, INC.

If you need help with this form, please consult your Envirite Technical Marketing Representative, call Customer Service at 717-846-1900 or refer to Instructions for Completing Waste Profile Information Form

I. CUSTOMER INFORMATION:

a. Generator Name: USACE-Norfolk District b. SIC: 9999
c. Facility Address: Wallops Flight Facility, Wallops Island, VA 23337
d. Pickup Address: Same as above
e. Generator USEPA ID: VAR000509240 f. Generator State ID: n/a
g. Technical Contact: Matt Gemmell (CESI) h. Title: Business Manager
i. Phone: 804-239-0968 j. Fax: 804-798-3326
k. Emergency Contact: Same as above l. After hours Phone:

II. INVOICING INFORMATION:

a. Generator Facility ☐ Same as above (If different, please complete the following) **PO Required?** ☐ YES ☐ NO
b. Company Name: Capitol Environmental Services, Inc.
c. Address: PO Box 130 Kensington MD 20895
d. Contact: Amy Moser e. Phone: 302-652-8999 f. Fax:
g. Quote to Contact: Matt Gemmell h. Phone: 804-239-0968 i. email address:

III. WASTE INFORMATION:

a. Generator Description/Waste common name: Rock contaminated with Mercury
b. Process generating waste (Please describe in detail the process which generates this waste):
Remediation

ESTIMATED SHIPMENT FREQUENCY: ☒ 1x ☐ weekly ☐ monthly ☐ quarterly ☐ semi-annually ☐ yearly

other

ESTIMATED VOLUME per SHIPMENT: 3 ☐ gallons ☐ tons ☐ pounds ☐ cubic yards ☐ bags ☒ drums ☐ boxes

PROCESS SCHEMATIC SKETCH: *(Required for PADEP waste module approval. Please provide rough sketch or attach drawing.)*

IV. PHYSICAL CHARACTERISTICS OF WASTE

a. Physical state @ 20°C(68°F)	b. Color	d. Phases	f. pH Range	g. Flash Point	h. Free Liquid (EPA SW-846, Method 9095)
☒ Solid	various	☒ Single	☐ ≤ 2	☐ < 100°F	
☐ Powder		☐ Double	☐ >2 - 4.9	☐ 100 - 139°F	
☐ Wood	c. Obvious Odor	☐ Multi	☒ 5 - 9.9	☐ > 140°F	☐ Yes
☐ Liquid	none	e. Oil/Grease	☐ 10 - 12.4	☒ > 200°F	☒ No
		n/a %	☐ ≥ 12.5		

i. Does this waste produce any explosive, combustible or toxic gases upon neutralization with lime? ☐ Yes ☒ No

Comments:

BOXED AREA FOR ENVIRITE USE ONLY

STREAM NUMBER DATE RECEIVED DATE NEEDED

TMR ANALYSIS REQUESTED: NEW ☐ RECERTIFICATION ☐ OTHER

If you need help with this form, please consult your Envirite Technical Marketing Representative, call Customer Service at 717-846-1900 or refer to Instructions for Completing Waste Profile Information Form.

V. CHEMICAL COMPOUNDS OR ELEMENTS

a. Please specify chemicals:	Range:		
Rock	99.9	- 99.99	%
Metallic Mercury	0.01	- 0.1	%
Total Hg = 2120 mg/kg		-	%
TCLP Hg = 48 ug/l		-	%
		-	%
Total in right column must be > or = 100%	TOTAL		%

b. Indicate if any of the following apply to this waste:

- ☐ Radioactive
- ☐ Asbestos
- ☐ Dioxins
- ☐ Pyrophoric waste
- ☐ Shock sensitive waste
- ☐ Medical waste
- ☐ Crystalline-free silica
- ☐ Pesticides
- ☐ Herbicides
- ☐ Insecticides
- ☐ PCB's
- ☒ **NONE in this section present**

VI. HAZARDS INFORMATION

a. Identify all EPA RCRA **Listed** hazardous waste numbers which apply

☐ F006	☐ F009	☐ F019	☐ K004	☐ K007	☐ Other	☐ Applicable State codes
☐ F007	☐ F011	☐ K002	☐ K005	☐ K008		
☐ F008	☐ F012	☐ K003	☐ K006	☐ K062		

b. EPA RCRA **Characteristic** hazardous waste numbers

☐ D001 (Oxidizer) ☐ D002 (Corrosive) ☐ D003 (Reactive) (Cyanide ≥ 250 OR Sulfide ≥ 500) - ***Specify:***

***** ADDRESS EACH ENTRY *****

Code	Constituent	Regulatory level TCLP (mg/l)			Actual (if >)
D004	Arsenic	☐ <	5	≥ ☐	
D005	Barium	☐ <	100	≥ ☐	
D006	Cadmium	☐ <	1	≥ ☐	
D007	Chromium	☐ <	5	≥ ☐	
D008	Lead	☐ <	5	≥ ☐	
D009	Mercury	☒ <	0.2	≥ ☐	
D010	Selenium	☐ <	1	≥ ☐	
D011	Silver	☐ <	5	≥ ☐	
D012	Endrin	☐ <	0.02	≥ ☐	
D013	Lindane	☐ <	0.4	≥ ☐	
D014	Methoxychlor	☐ <	10	≥ ☐	
D015	Toxaphene	☐ <	0.5	≥ ☐	
D016	2,4-D	☐ <	10	≥ ☐	
D017	2,4,5-TP(Silvex)	☐ <	1	≥ ☐	
D018	Benzene	☐ <	0.5	≥ ☐	
D019	Carbon tetrachloride	☐ <	0.5	≥ ☐	
D020	Chlordane	☐ <	0.03	≥ ☐	
D021	Chlorobenzene	☐ <	100	≥ ☐	
D022	Chloroform	☐ <	6.0	≥ ☐	

Code	Constituent	Regulatory level TCLP(mg/l)			Actual (if >)
D024	m-Cresol	☐ <	200	≥ ☐	
D025	p-Cresol	☐ <	200	≥ ☐	
D026	Total Cresols	☐ <	200	≥ ☐	
D027	1,4-Dichlorobenzene	☐ <	7.5	≥ ☐	
D028	1,2-Dichloroethane	☐ <	0.5	≥ ☐	
D029	1,1-Dichloroethylene	☐ <	0.7	≥ ☐	
D030	2,4-Dinitrotoluene	☐ <	0.13	≥ ☐	
D031	Heptachlor	☐ <	0.008	≥ ☐	
D032	Hexachlorobenzene	☐ <	0.13	≥ ☐	
D033	Hexachlorobutadiene	☐ <	0.5	≥ ☐	
D034	Hexachloroethane	☐ <	3.0	≥ ☐	
D035	Methyl Ethyl Ketone	☐ <	200	≥ ☐	
D036	Nitrobenzene	☐ <	2	≥ ☐	
D037	Pentachlorophenol	☐ <	100	≥ ☐	
D038	Pyridine	☐ <	5	≥ ☐	
D039	Tetrachloroethylene	☐ <	0.7	≥ ☐	
D040	Trichloroethylene	☐ <	0.5	≥ ☐	
D041	2,4,5-Trichlorophenol	☐ <	400	≥ ☐	
D042	2,4,6-Trichlorophenol	☐ <	2	≥ ☐	

If you need help with this form, please consult your Envirite Technical Marketing Representative, call Customer Service at 717-845-1900 or refer to Instructions for Completing Waste Profile Information Form.

D023	o-Cresol	☐ <	200	≥ ☐	D043	Vinyl chloride	☐ ≤	0.2 ≥ ☐

c.

Does this waste contain Underlying Hazardous Constituents (D-code wastes) ?	☐ Yes	☒ No	If yes, complete section VII
Does this waste contain Total VOC's at or above 500 ppmw?	☐ Yes	☒ No	
Per the LDR program's definition, this waste is a	☐ Wastewater†	☒ Nonwastewater**	

† "Wastewaters" are wastes that contain less than 1% total organic carbon (TOC) and less than 1% total suspended solids (Nonfilterable Residues Test — Method No. 160.2 Methods for Chemical Analysis of Water and Wastes, EPA — 600/4-7-020, March 1983).

** *"Nonwastewaters" are those wastes that do not meet the definition of "Wastewaters."*

If you need help with this form, please consult your Envirite Technical Marketing Representative, call Customer Service at 717-846-1900 or refer to Instructions for Completing Waste Profile Information Form.

VII. UNDERLYING HAZARDOUS CONSTITUENTS (List all hazardous constituents - attach additional sheets if necessary)

Constituent	Concentration	mg/kg or mg/L	Constituent	Concentration	mg/kg or mg/L
n/a					

VIII. SHIPPING INFORMATION:

Proper DOT Shipping Name Hazardous Waste Solid, N.O.S. (D009)

(include technical names in parenthesis where applicable, in accordance with 49CFR 172.203(k))

Technical name(s): _____

DOT Hazard Class 9 DOT Identification No. NA3077 Packing Group III

SECTION IX. SAMPLING INFORMATION:

Please submit sample promptly. Organic analyses must be completed within 14 days of sample collection; otherwise, resampling will be necessary.

Date of Sampling: _____ Time of Sampling: _____ ☐ AM ☐ PM (please check one)

Samplers Signature _____ Samplers Name _____

Title and Affiliation of Sampler _____

X. AUTHORIZATION/ CERTIFICATION:

This form must be signed by a person authorized to represent the generator. If the individual signing the Waste Profile is a broker or other agent not employed by the generator of the waste, the generator must provide written notification (on generator letterhead) of authority granted that individual. It is understood that persons identified as Primary, Technical, or Emergency Contact have been granted such authority by the generator.

I authorize Envirite of Pennsylvania to make corrections to this waste approval file. I understand this will require my verbal permission, and that I will be given written confirmation of any changes.

Signature _____

I hereby avow that any pertinent information that is known by the generator concerning possible hazards has been disclosed. I certify that, to the best of my knowledge, all statements and attachments are correct and accurate representations of this waste material. I authorize Envirite of Pennsylvania to obtain a sample from any waste shipment for the purposes of recertification.

Signature _____ Title Env Engineer ACOE

Name Robert Reali Date 7/6/06

(Please print)

All information on this form and its attachments will be kept confidential within the limits of existing environmental laws and regulations. We suggest that you retain a copy of this form and its attachments for your records.

020C

APPENDIX F

COMMUNICATIONS

Mackey, Ed

From: Reali, Robert S NAO [Robert.S.Reali@nao02.usace.army.mil]
Sent: Tuesday, November 07, 2006 12:39 PM
To: Mackey, Ed
Subject: TCRA RTCs

Ed,

Go ahead and finalize the TCRA AAR. All RTCs have been concurred with.

Thanks
Rob

Rob Reali, P.E.
Environmental Engineer
USACE - Norfolk District
Office 757 201-7098
Cell 757 362-4022
Fax 757 201-7478

Weston Solutions, Inc.
Suite 235
4917 Waters Edge Drive
Raleigh, North Carolina 27606
919-424-2200 • Fax 919-424-2201

02 November 2006

Mr. John Regan, P.E.
Unites States Army Corps of Engineers
Norfolk District
CENAO-EN-G
803 Front Street
Norfolk, VA 23510-1096

Subject: **Responses to Comments Regarding the Old Wastewater Treatment Plant Site Time Critical Removal Action Draft After Action Report at Wallops Flight Facility, Virginia**
Norfolk District Contract No. DACW33-00-D-007, DO EA01, Mod. 01
WESTON Project No. 03886.183.029

Dear Mr. Regan:

Weston Solutions, Inc. (WESTON) is submitting this letter is to provide responses to comments received from the Virginia Department of Environmental Quality (VDEQ) in a letter dated 13 October 2006, and from the National Aeronautics and Space Administration (NASA) in an e-mail dated 19 October 2006 regarding the contents of the Time Critical Removal Action (TCRA) Draft After Action Report at Wallops Flight Facility, Virginia (Attachment 1). No comments were received from the United States Environmental Protection Agency (EPA). There is one additional correction to the Draft Report concerning the number of drums associated with personal protection equipment. The report inadvertently cited two drums, when there were three drums actually sent for hazardous disposal. The report has been amended to reflect this change. The Uniform Hazardous Waste Manifest and Certificate of Disposal (not presented in the Draft Report, but will be presented in Appendix E of the Final Report) reflect the accurate number of drums sent for disposal.

The VDEQ and NASA comments are presented in italics with the proposed resolutions in bold for ease of review.

The Virginia Department of Environmental Quality (VDEQ), Office of Federal Facilities Restoration has reviewed the Draft After Action Report for a Time Critical Removal Action of the Trickling Filter at the Old WWTP Site dated August 2006. VDEQ appreciates the opportunity to review this document and offers the following comments:

1. *General Comment: Please include an Executive Summary as the opening to the report. The Summary should briefly describe the action taken and the volume (tonnage) and description (filter media, concrete rubble, elemental mercury, mercury tainted soil/sediment, filter mechanicals, etc.) of hazardous and non-hazardous wastes generated. The Summary should also indicate the next action to be taken at this site, the Site Investigation, will begin the site evaluation process.*

The Executive Summary has been incorporated, as requested. Attachment 2 presents the proposed Executive Summary.

2. *Section 1.0: Please mention in the 2nd paragraph the remaining components of the WWTP such as piping, process tanks, drying beds, etc. will be investigated during the SI.*

The following statement has been incorporated, as requested. "Additional investigative efforts will be conducted at the remaining site structures (process tanks, drying beds, etc.), during the upcoming Site Investigation."

3. *Section 1.1: In the 3rd bullet, please replace the phrase "managed accordingly" with a brief description of the containers used such as "placed in lined (insert approximate size) containers and sent to Envirite via DOT approved waste haulers".*

The text has been re-worded, replacing "managed accordingly" with "placed in labeled, lined-steel drums (three 55-gallon and one 85-gallon)", as requested.

4. *Section 3.2, page 3-2: The 3rd bullet (and 2nd to last bullet on page 3-3) indicates the ends of the existing pipes were capped. Were their locations also logged using GPS as set forth on page 3-2 of the Work Plan? Were the pipes metal or terra cotta? In the 2nd sentence of the last bullet on the page, please specify the "stone initially removed from the trickling filter structure" came from Zone 2.*

The text has been re-worded in both bullets to indicate the pipes were constructed of steel. The pipe locations were not located using a GPS unit. It is noted that the remaining pipe at both ends is relatively short, and easily located based on remaining site structures. A bullet will be added to Section 3.7 (Work Plan Deviations) to indicate that recording the GPS locations of the pipe ends with a GPS unit was not performed. The "Zone 2" language has been incorporated into the requested text.

5. *Section 3.2.2, page 3-7: Did the process of cleaning the concrete grates and the concrete trickling filter tank generate any liquid waste? If so, how was the liquid waste tested, managed, and disposed?*

The decontamination of the concrete did not generate significant amounts of liquid waste. Decontamination liquids were absorbed with remaining dirt/sludge that was

collected and placed in the labeled, lined 55-gallon drums (Drums 6 through 8) for disposal as hazardous waste. The sludge and rock in the drums was sampled for waste characterization. The results indicated the material was of a hazardous nature, and was disposed accordingly.

6. *Section 3.5: This Section should include more information about the volume of hazardous and non-hazardous waste generated during the TCRA, enhancing, or restating, what is provided in the Executive Summary. At a minimum, please break the description of the waste generated into hazardous and non-hazardous and, within those categories include measures (pounds, tons, cubic yards, drums) of filter media, concrete debris, and mechanical debris. If possible, please include measures of elemental mercury recovered (7-8 pounds estimated elsewhere in the report), mercury tainted soil/sediment removed, and mercury tainted cleaning agents (Mersorb) generated. Much of this information may be available in the daily field notes found in Appendix A but should be presented in the body of the report.*

WESTON has incorporated estimated volumes of material, as requested. Please note that for rock and concrete volumes estimated in field notes, the actual tonnage was less when the roll offs were weighed at the Accomack County North Landfill.

NASA Comments

John – Thank you for the opportunity to review this document. Overall the document is well written, and I only have a few comments. I have reviewed the comments from Paul and my comments are similar to his. In concurrence with Paul's comment #6, it would be helpful to explain in the text the total volumes of waste removed (similar to what is stated on the last Daily Work Sheet, dated 5/19/06).

See Comment #6 above.

Another comment pertains to page 3-4, Section 3.2.1 (first paragraph); was Virginia's Miss Utility service contacted? Also, please change WFF "Public Works" to WFF "Facilities Management Branch".

A review of the Kick-Off meeting notes (Appendix D of the Final Work Plan) and project file documentation indicates the NASA personnel, not Miss Utility, were the appropriate designee to locate utilities. The statement has been re-worded to indicate "Prior to beginning site preparation and intrusive work activities, WESTON requested a utility mark out that was conducted by WFF Facilities Management Branch personnel to verify the locations of utilities. Permit number 1424 was issued for the excavation."

Regarding Section 4.0 and page 3-13 (3rd paragraph) where the text references Region 9 PRGs. It would be helpful to the reader for the report to briefly explain why Region 9 was

selected over Region 3 – (....Region III has not established these type of goals for Mercury; therefore.....).

The following statement has been incorporated in Section 4.0, as requested. "Region III has not established a generic remedial goal for Mercury; therefore USEPA Region 9 PRGs are generic risk-based concentrations used as guidelines when assessing contaminated sites (USEPA, 2004)." Additionally, the following statement has been incorporated in Section 3.5, as requested. "For comparison purposes only, TAL metals (except mercury) results of sediment samples were compared to USEPA Region 9 Preliminary Remediation Goals (PRGs) for Residential Soils (Note: Region III has not established generic remedial goals for metals)."

Please initiate review of the proposed resolution of comments presented in this letter. Following review of the proposed resolutions, WESTON shall finalize the document. Please call me at (919) 424-2223 with questions regarding the future direction of this effort.

WESTON appreciates this opportunity to provide environmental services to the Norfolk District. The Norfolk District is a valued client of WESTON, and we look forward to completing this project to the mutual satisfaction of the parties involved.

Very truly yours,

Weston Solution, Inc.

Mark Cramer, P.E.
Project Manager

Enclosure
cc: Carolyn Turner (NASA, 1 copy)
Jerry Hoover (EPA, Region III, 1 copy)
Paul E. Herman (VDEQ, 1 copy)
File (WESTON, 1 copy)

ATTACHMENT 1

ORIGINAL COMMENTS

October 13, 2006

Mr. John F. Regan
Department of the Army
Norfolk District Corps of Engineers
803 Front Street
Norfolk, Virginia 23510-1096

Subject: Wallops Island Flight Facility
Draft After Action Report for a Time Critical Removal Action
Trickling Filter at Old WWTP Site

Dear Mr. Regan:

The Virginia Department of Environmental Quality (VDEQ), Office of Federal Facilities Restoration has reviewed the *Draft After Action Report for a Time Critical Removal Action of the Trickling Filter at the Old WWTP Site* dated August 2006. VDEQ appreciates the opportunity to review this document and offers the following comments:

1. General Comment: Please include an Executive Summary as the opening to the report. The Summary should briefly describe the action taken and the volume (tonnage) and description (filter media, concrete rubble, elemental mercury, mercury tainted soil/sediment, filter mechanicals, etc.) of hazardous and non-hazardous wastes generated. The Summary should also indicate the next action to be taken at this site, the Site Investigation, will begin the site evaluation process.

2. Section 1.0: Please mention in the 2nd paragraph the remaining components of the WWTP such as piping, process tanks, drying beds, etc. will be investigated during the SI.

3. Section 1.1: In the 3rd bullet, please replace the phrase "managed accordingly" with a brief description of the containers used such as "placed in lined (insert approximate size) containers and sent to Envirite via DOT approved waste haulers".

4. Section 3.2, page 3-2: The 3rd bullet (and 2nd to last bullet on page 3-3) indicates the ends of the existing pipes were capped. Were their locations also logged using GPS as set forth on page 3-2 of the Work Plan? Were the pipes metal or terra cotta? In the 2nd sentence of the last bullet on the page, please specify the "stone initially removed from the trickling filter structure" came from Zone 2.

5. Section 3.2.2, page 3-7: Did the process of cleaning the concrete grates and the concrete trickling filter tank generate any liquid waste? If so, how was the liquid waste tested, managed, and disposed?

6. Section 3.5: This Section should include more information about the volume of hazardous and non-hazardous waste generated during the TCRA, enhancing, or restating, what is provided in the Executive Summary. At a minimum, please break the description of the waste generated into hazardous and non-hazardous and, within those categories include measures (pounds, tons, cubic yards, drums) of filter media, concrete debris, and mechanical debris. If possible, please include measures of elemental mercury recovered (7-8 pounds estimated elsewhere in the report), mercury tainted soil/sediment removed, and mercury tainted cleaning agents (Mersorb) generated. Much of this information may be available in the daily field notes found in Appendix A but should be presented in the body of the report.

If you have any questions concerning these comments, please give me a call at (804) 698-4464.

Sincerely,

Paul E. Herman, P.E.
Remediation Project Manager

cc: Jerry Hoover, EPA Region III (electronic copy only)
Carolyn Turner, NASA Wallops Flight Facility
NASA Wallops – FUDS correspondence file
Milt Johnston, VDEQ-TRO

From: Carolyn Turner [mailto:Carolyn.Turner-1@nasa.gov]
Sent: Thursday, October 19, 2006 4:03 PM
To: 'Herman,Paul'; Regan, John F NAO
Cc: Hoover.Gerald@epamail.epa.gov
Subject: RE: NASA Wallops - After Action Report for Time Critical Removal Action at Old WWTP

John – Thank you for the opportunity to review this document. Overall the document is well written, and I only have a few comments. I have reviewed the comments from Paul and my comments are similar to his. In concurrence with Paul's comment #6, it would be helpful to explain in the text the total volumes of waste removed (similar to what is stated on the last Daily Work Sheet, dated 5/19/06).

Another comment pertains to page 3-4, Section 3.2.1 (first paragraph); was Virginia's Miss Utility service contacted? Also, please change WFF "Public Works" to WFF "Facilities Management Branch".

Regarding Section 4.0 and page 3-13 (3rd paragraph) where the text references Region 9 PRGs. It would be helpful to the reader for the report to briefly explain why Region 9 was selected over Region 3 – (….Region III has not established these type of goals for Mercury; therefore…….).

Thanks John –
Carolyn

ATTACHMENT 2

PROPOSED EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Weston Solutions, Inc (WESTON) has prepared this After Action Report for the U.S. Army Corps of Engineers (USACE) – Norfolk District for the Time Critical Removal Action (TCRA) completed at the site known as the Old Wastewater Treatment Plant (WWTP), located at the National Aeronautics and Space Administration's (NASA) Wallops Flight Facility (WFF), Accomack County, Virginia (VA). The TCRA addressed the release of elemental mercury from the Old WWTP Site's trickling filter structure and was required to prevent further migration of the mercury contamination. The remaining site structures and potential source areas (e.g., process tanks, drying beds, etc.) will be addressed during an upcoming Site Investigation (SI).

The Old WWTP Site is located within the Main Base (study area) of NASA's WFF. The Old WWTP was constructed by the Department of the Navy on approximately 0.75 acres of previously undeveloped land in the early 1940s, at which time Navy began using the study area as a naval aviation training facility. The Old WWTP Site contains three cinder-block and concrete structures (control/pump house, process tanks [clarifiers], and sludge drying beds) and the trickling filter. The Navy closed the training facility in 1959, at which time NASA took custody of the study area. NASA abandoned the facility upon obtaining custody of the land and has not used the Old WWTP since transfer of ownership in 1959.

Previous environmental investigations conducted at the Old WWTP Site have identified residual sludge piles, located north of the Old WWTP facility buildings. In addition, the sludge drying beds also may contain residual sludge materials associated with former WWTP activities. The Old WWTP structures are partially degraded and overgrown with vegetation. A Principal Responsible Party (PRP) Analysis concluded that the U.S. Department of Defense (USDOD) and USACE should assume responsibility for the Old WWTP and the surrounding area under the Formerly Used Defense Site (FUDS) program.

On December 9, 2005, USACE representatives conducted an on-site reconnaissance, in support of the upcoming SI to be conducted at the Old WWTP Site under the FUDS program. During the reconnaissance visit, beads of elemental mercury were discovered several inches below the surface immediately adjacent to the center pedestal of the trickling filter's rotary arms. Just below the surface of the stone filter media, beads of elemental mercury were observed several inches from the pedestal.

Activities completed during the TCRA included the following:

- Excavation of the mercury-contaminated trickling filter stone.
- Sampling of the trickling filter stone for disposal characterization.
- Collection of free (elemental) mercury from within the trickling filter structure, and disposal and/or recycling of the free mercury.
- Sampling of the concrete for disposal characterization.
- Demolition of the trickling filter structure, with transportation of the non-hazardous demolition debris to an off-site disposal facility, Accomack County North Landfill.
- Transportation of the trickling filter stone to Accomack County North Landfill in Atlantic, VA, an off-site non-hazardous waste landfill for disposal.
- Trickling filter stone characterized as hazardous waste, as well as the trickling filter's mercury seal, were placed in labeled, lined-steel drums (three 55-gallon and one 85-gallon), and sent to Envirite of Pennsylvania (PA) in York, PA for recycling.
- Capping of the Old WWTP system piping encountered beneath the trickling filter structure during demolition.
- Sampling of soil under the trickling filter floor to confirm mercury removal.
- Backfilling and grading of excavated areas and completion of site restoration.

As part of the TCRA, WESTON collected four composite trickling filter stone media samples from discrete subsampling locations; six grab concrete chip samples from the trickling filter side walls, pedestal, floor and southern wet well; one grab sediment sample from the trickling filter's southern wet well; and one aqueous sample from standing water located inside the cistern of the pump house building.

Toxicity characteristic leaching procedure (TCLP) metals were not detected in the trickling filter stone samples at concentrations equal to or exceeding their respective TCLP Maximum Concentration of Contaminants (MCCs). Total mercury was detected

in one sample at 2,120 milligrams per kilogram (mg/kg). TCLP metals were not detected in the concrete chip samples. Five target analyte list (TAL) metals (antimony, arsenic, iron, lead, and mercury) were detected in the sediment sample collected from the trickling filter's southern wet well at concentrations above their respective U.S. Environmental Protection Agency (USEPA) Region 9 Preliminary Remediation Goals (PRGs) for Residential Soils (Note: USEPA Region III has not established generic remedial goals for metals). TCLP volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, herbicides or metals, and reactive cyanide and reactive sulfide were not detected in the aqueous sample collected from the standing water inside the pump house. In addition, results of corrosivity (pH), flash point, and paint filter tests on the aqueous sample indicated the standing water inside the pump house was not hazardous waste.

Based on the analytical results, seven roll-off containers containing trickling filter stone media and three roll-off containers containing demolished concrete were transported to Accomack County North Landfill for disposal as non-hazardous waste. The total amount of rock and concrete sent to Accomack County North Landfill was 91.42 tons. Three 55-gallon drums containing an estimated 1,916 pounds of trickling filter stone media visually contaminated with elemental mercury, sludge material (including approximately 5 pounds of spent MercSorb® and a limited amount of decontamination fluid) from the base of the trickling filter, and sediment from the southern wet well, were transported to Envirite of Pennsylvania (PA) for disposal/recycling as hazardous waste.

The mercury seal was removed intact and placed in a lined 85-gallon drum. Recovered elemental mercury through vacuuming (approximately 7 to 8 pounds) was placed in sealed containers and containerized in the 85-gallon drum along with the mercury seal, spent high efficiency particulate air (HEPA) vacuum filters, and the detached lock valve. Personal protective equipment (PPE) and miscellaneous waste (other than the trickling filter tank materials) were containerized in three 55-gallon drums. The 85-gallon drum containing the recovered elemental mercury, mercury seal, spent HEPA vacuum filters, and the detached lock valve, and three 55-gallon drums containing the PPE and miscellaneous waste were

transported to Envirite of PA as hazardous waste. The contents of the 85-gallon drum (467 pounds) were recycled/disposed, while the three 55-gallon drums containing the PPE and miscellaneous waste (269 pounds) were disposed in a hazardous waste landfill.

As part of the TCRA, WESTON collected five grab confirmatory soil samples, including a duplicate, from beneath the trickling filter's concrete floor, trench/underdrain system, and southern wet well after demolition of the trickling filter tank. In addition, one grab sediment sample was collected from the confluence of two intermittent streams located north of the Old WWTP buildings, in order to determine whether contaminants had been transported to nearby wetlands and potentially to nearby surface water bodies.

TCLP metals, SVOCs, pesticides or herbicides, and reactive cyanide and reactive sulfide were not detected in a confirmatory soil sample submitted for full TCLP analyses. Concentrations of total mercury in the confirmatory soil samples ranged from 0.033 mg/kg to 1.3 mg/kg, well below the established mercury action level of 20 mg/kg. Except for arsenic, which was detected at concentrations ranging from 1.7 mg/kg to 2.6 mg/kg, other TAL metals were detected in the confirmatory soil sample and sediment sample at concentrations below their respective USEPA Region 9 PRGs for Residential Soils. Available background information indicates that the arsenic concentrations are the result of natural conditions at WFF.

Site restoration included activities needed to return the site to pre-mobilization conditions. Following completion of the TCRA, the bottom of the trickling filter tank area was backfilled to ground surface with certified and sampled non-impacted off-site borrow material. A geo-textile was placed in the excavation prior to backfilling to delineate virgin soil from clean fill. Top soil was placed and compacted on top of the backfill soil and on re-graded soil in the disturbed areas at the site. Following the placement of the topsoil, seed, straw mulch, and nutrients were applied to disturbed areas. The entrance, access road, and cleared area were left to remain in order to facilitate additional investigations (e.g., completion of the SI) at the site.

Mackey, Ed

From: Carolyn Turner [Carolyn.Turner-1@nasa.gov]
Sent: Friday, May 26, 2006 2:13 PM
To: 'Herman,Paul'; 'Reali, Robert S NAO'; 'Regan, John F NAO'; Price-Fay.Michelle@epamail.epa.gov
Cc: Mackey, Ed; Theodore J Meyer
Subject: RE: Fill Material- Wallops

Rob – I concur with your assessment.
Thank you for providing this information.
-Carolyn Turner

From: Herman,Paul [mailto:peherman@deq.virginia.gov]
Sent: Wednesday, May 24, 2006 2:24 PM
To: Reali, Robert S NAO; Regan, John F NAO; Carolyn Turner; Price-Fay.Michelle@epamail.epa.gov
Cc: Mackey, Ed
Subject: RE: Fill Material- Wallops

The backfill soil sample results don't show anything is elevated and all values are within acceptable ranges for clean fill. VDEQ has no problem with using this material as fill at the WWTP TCRA site.

Paul E. Herman, P.E.
Remediation Project Manager
Federal Facilities Program
Virginia Department of Environmental Quality
Phone: (804) 698-4464
email: peherman@deq.virginia.gov

-----Original Message-----
From: Reali, Robert S NAO [mailto:Robert.S.Reali@nao02.usace.army.mil]
Sent: Wednesday, May 24, 2006 2:19 PM
To: Herman,Paul; Regan, John F NAO; Carolyn Turner; Price-Fay.Michelle@epamail..epa.gov
Cc: Mackey, Ed
Subject: Fill Material- Wallops

Attached are the potential backfill sample results from a local supplier sand pit.
A quick check against EPA Region III RBCs does not indicate an exceedance of any residential RBC.

The TPH-GRO result is a hit at 6.6 mg/kg, well below the DEQ clean fill guideline of 50 mg/kg. Also, no detects for VOCs and SVOCs (or mercury)

I'm putting this out to the team for consideration to use this material for Backfill.

Rob Reali, P.E.
Environmental Engineer
USACE - Norfolk District
Office 757 201-7098
Cell 757 362-4022

Fax 757 201-7478

8/22/2006

Mackey, Ed

From: Herman,Paul [peherman@deq.virginia.gov]
Sent: Wednesday, May 24, 2006 2:24 PM
To: Reali, Robert S NAO; Regan, John F NAO; Carolyn Turner; Price-Fay.Michelle@epamail.epa.gov
Cc: Mackey, Ed
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Paul E. Herman, P.E.
Remediation Project Manager
Federal Facilities Program
Virginia Department of Environmental Quality
Phone: (804) 698-4464
email: peherman@deq.virginia.gov

-----Original Message-----
From: Reali, Robert S NAO [mailto:Robert.S.Reali@nao02.usace.army.mil]
Sent: Wednesday, May 24, 2006 2:19 PM
To: Herman,Paul; Regan, John F NAO; Carolyn Turner; Price-Fay.Michelle@epamail.epa.gov
Cc: Mackey, Ed
Subject: Fill Material- Wallops

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I'm putting this out to the team for consideration to use this material for Backfill.

Rob Reali, P.E.
Environmental Engineer
USACE - Norfolk District
Office 757 201-7098
Cell 757 362-4022
Fax 757 201-7478

Mackey, Ed

From: Reali, Robert S NAO [Robert.S.Reali@nao02.usace.army.mil]
Sent: Wednesday, May 24, 2006 9:37 AM
To: Herman,Paul; Regan, John F NAO; Carolyn Turner; Price-Fay.Michelle@epamail.epa.gov
Cc: Mackey, Ed; Cramer, Mark; Fromme, Cheryl L NAO
Subject: RE: Summary of TCRA work 5-15 thru 5-19

From: Herman,Paul [mailto:peherman@deq.virginia.gov]
Sent: Wednesday, May 24, 2006 8:05 AM
To: Regan, John F NAO; Carolyn Turner; Price-Fay.Michelle@epamail.epa.gov
Cc: Reali, Robert S NAO; Mackey, Ed; Cramer, Mark; Fromme, Cheryl L NAO
Subject: RE: Summary of TCRA work 5-15 thru 5-19

John,

Thanks for the update.

Any luck finding the cistern overflow and WWTP outfall locations?

ACOE - There was no end of pipe located for either. Based on our discussion last week we had agreed to move the outfall sample location to the overflow pipe since this would have been the mostly like discharge after operation of the plant ceased. To find the sample location the overflow line was scaled off the site drawing and a sample collected in the creek bed where the line appeared to have terminated. These locations will be further characterized as part of the SI.

How much decon water has been generated/containerized?

ACOE - Mercury decon / cleanup procedures dictate a dry decon with amalgamation powder and a Mercury Vacuum. Sampling equipment was all disposable; therefore no drums of decon water were generated.

Any data available on samples collected the previous week?

ACOE - The only sample collected the previous week was the fill dirt and it was not placed on a quick turn around as the work schedule did not require it. All samples are expected to be back this week

Any storms during the week summarized?

ACOE - No significant storms were noted that week

To date, have any roll-offs and drums have been taken off base for disposal?

ACOE - No material has been taken off site without having the sample results.

If anyone has any questions, please call me
Cell 757 362-4022

Paul E. Herman, P.E.
Remediation Project Manager
Federal Facilities Program
Virginia Department of Environmental Quality
Phone: (804) 698-4464
email: peherman@deq.virginia.gov

-----Original Message-----
From: Regan, John F NAO [mailto:John.F.Regan@nao02.usace.army.mil]
Sent: Monday, May 22, 2006 1:26 PM

To: Carolyn Turner; Herman,Paul; Price-Fay.Michelle@epamail.epa.gov
Cc: Reali, Robert S NAO; Mackey, Ed; Cramer, Mark; Fromme, Cheryl L NAO
Subject: Summary of TCRA work 5-15 thru 5-19

All,

Here is a summary of the activities that occurred during the second week of the TCRA.

- 5/15: All exposed rock from Zone 2 was placed in lined roll off #7. Total volume is estimated at 20 tons. Approximately 1 and ½ 55-gallon drums were filled with rock and sludge from Zone 1. Pools of elemental Mercury were vacuumed and containerized before placement in the 55-gallon drums.

- 5/16: All remaining rock from Zone 1 was hand sorted, Lumex screened, and placed in roll-off #7 or in 55-gallon drums. Rocks and sludge within the trickling filter trench were placed in 55-gallon drums. Visible mercury was vacuumed and containerized in sealed jars. Concrete grates covering the trickling filter trench were sprinkled with Mersorb powder and scrubbed prior to placement in roll-off #8. Total volume now in roll-off #7 is estimated at 20-25 tons. Approximately 3 and ½ 55-gallon drums were filled with rock and sludge from Zone 1. Total elemental mercury containerized is estimated at 5-7 pounds.

- 5/17: Final cleaning of the interior surface areas of the trickling filter took place today. Surfaces were sprayed with water then sprinkled with Mersorb powder and scrubbed with bristle brushes. Sediment from the southern wet well of the filter was sampled then the remaining material was containerized in a 55-gallon drum. Chip samples of filter concrete were collected from 6 locations. The pedestal arm of the filter was then detached from the pier and placed in an oversized drum. The pier was then demolished. Demolition of the main filter bed concrete then began.

- 5/18: Concrete demolition and removal continued. All 55-gallon drums were sampled and tentatively labeled as "Hazardous Materials" pending analysis. Roll-off dumpsters containing any material were labeled as "pending analysis." Estimated concrete removed thus far is 15 tons, representing 70% completion. Excavation was covered at the end of the day.

- 5/19: Concrete demolition and removal continued and was completed today. A soil sample was collected from beneath the south wet well for TCLP analysis. The floor opening in the Pump House was covered with plywood which was marked with the word "HOLE" in orange spray paint. Orange snow fence was then tacked to the door frame to prevent entry into the Pump House. The excavation was covered with filter fabric then with poly sheeting. All tarps on the roll-off dumpsters were retied securely. Green metal fencing and orange snow fence were put in place to block access to the site.

- 5/19: Final estimate of liquid elemental mercury collected is 7 pounds. This estimate does not include amalgamated mercury adhering to filter stone and concrete in the vicinity of the pedestal. Estimated concrete removed is 25 tons. Estimated filter stone removed and placed in roll-off dumpsters during project is 120 tons. The most contaminated filter stone, concrete, and cleaning debris were containerized in 8 55-gallon drums. The pedestal arm, vacuumed and containerized liquid mercury, and poly sheeting used during pedestal arm removal were placed in an 85-gallon overpack drum.

Let me know if you any questions or concerns that need clarifying.

John F. Regan, P.E.
FUDS Project Manager, Projects Branch
USACE Norfolk District
voice: 757-201-7094
fax: 757-201-7875
cell: 757-575-6716

Mackey, Ed

From: Regan, John F NAO [John.F.Regan@nao02.usace.army.mil]
Sent: Monday, May 22, 2006 8:01 AM
To: Reali, Robert S NAO; Mackey, Ed; Cramer, Mark
Subject: FW: Summary of TCRA work 5-8 thru 5-12

Team,

Looks like Paul is satisfied. See his responses below. Thanks Ed and Rob for working through the issues with NASA and VDEQ.

John F. Regan, P.E.
FUDS Project Manager, Projects Branch
USACE Norfolk District
voice: 757-201-7094
fax: 757-201-7875
cell: 757-575-6716

From: Herman,Paul [mailto:peherman@deq.virginia.gov]
Sent: Monday, May 22, 2006 8:00 AM
To: Regan, John F NAO
Subject: RE: Summary of TCRA work 5-8 thru 5-12

John,

Thanks for your responses. See below for VDEQ's additional responses.

Paul E. Herman, P.E.
Remediation Project Manager
Federal Facilities Program
Virginia Department of Environmental Quality
Phone: (804) 698-4464
email: peherman@deq.virginia.gov

> -----Original Message-----
> **From:** Regan, John F NAO [mailto:John.F.Regan@nao02.usace.army.mil]
> **Sent:** Friday, May 19, 2006 2:05 PM
> **To:** Herman,Paul
> **Cc:** Reali, Robert S NAO; Carolyn Turner; Price-Fay.Michelle@epamail.epa.gov
> **Subject:** FW: Summary of TCRA work 5-8 thru 5-12
>
> Paul,
>
> Below are responses to your latest set of questions in pink. If you have further questions, please call Rob or myself.
>
> John F. Regan, P.E.
> FUDS Project Manager, Projects Branch
> USACE Norfolk District
> voice: 757-201-7094
> fax: 757-201-7875
> cell: 757-575-6716
>
> **From:** Herman,Paul [mailto:peherman@deq.virginia.gov]
> **Sent:** Wednesday, May 17, 2006 4:11 PM
> **To:** Regan, John F NAO
> **Cc:** Price-Fay.Michelle@epamail.epa.gov; Carolyn Turner; Reali, Robert S NAO; Fromme, Cheryl L NAO; Theodore J. Meyer
> **Subject:** RE: Summary of TCRA work 5-8 thru 5-12

John,

Thanks for your responses. Please see the "VDEQ Responses" below.

Paul E. Herman, P.E.
Remediation Project Manager
Federal Facilities Program
Virginia Department of Environmental Quality
Phone: (804) 698-4464
email: peherman@deq.virginia.gov

-----Original Message-----
From: Regan, John F NAO [mailto:John.F.Regan@nao02.usace.army.mil]
Sent: Wednesday, May 17, 2006 1:19 PM
To: Herman,Paul
Cc: Price-Fay.Michelle@epamail.epa.gov; Carolyn Turner; Reali, Robert S NAO; Fromme, Cheryl L NAO; Theodore J. Meyer
Subject: FW: Summary of TCRA work 5-8 thru 5-12

Paul,

Below are the responses to your questions in black. Let me know if you have any more questions.

John F. Regan, P.E.
FUDS Project Manager, Projects Branch
USACE Norfolk District
voice: 757-201-7094
fax: 757-201-7875
cell: 757-575-6716

From: Herman,Paul [mailto:peherman@deq.virginia.gov]
Sent: Tuesday, May 16, 2006 2:48 PM
To: Regan, John F NAO; Carolyn Turner
Cc: Price-Fay.Michelle@epamail.epa.gov; Reali, Robert S NAO; Fromme, Cheryl L NAO; Theodore J. Meyer; Mackey, Ed; Cramer, Mark
Subject: RE: Summary of TCRA work 5-8 thru 5-12

John,

Please see VDEQs comments regarding your responses and the summary in general. Additional comments may follow, this is all I could think of at the moment.

Paul E. Herman, P.E.
Remediation Project Manager
Federal Facilities Program
Virginia Department of Environmental Quality
Phone: (804) 698-4464
email: peherman@deq.virginia.gov

-----Original Message-----
From: Regan, John F NAO [mailto:John.F.Regan@nao02.usace.army.mil]
Sent: Tuesday, May 16, 2006 11:36 AM
To: Carolyn Turner
Cc: Herman,Paul; Price-Fay.Michelle@epamail.epa.gov; Reali, Robert S NAO; Fromme, Cheryl L NAO; Theodore J. Meyer; Mackey, Ed; Cramer, Mark
Subject: FW: Summary of TCRA work 5-8 thru 5-12
Importance: High

Carolyn,

See our responses to your questions below in green.

John F. Regan, P.E.
FUDS Project Manager, Projects Branch
USACE Norfolk District
voice: 757-201-7094
fax: 757-201-7875
cell: 757-575-6716

From: Carolyn Turner [mailto:Carolyn.Turner-1@nasa.gov]
Sent: Tuesday, May 16, 2006 9:52 AM
To: 'Regan, John F NAO'; Price-Fay.Michelle@epamail.epa.gov; 'Herman,Paul'
Cc: 'Reali, Robert S NAO'; 'Theodore J. Meyer'; Mackey, Ed; Cramer, Mark; William.B.Bott@nasa.gov; Susan.M.Fields@nasa.gov
Subject: RE: Summary of TCRA work 5-8 thru 5-12
Importance: High

John – Thank you for providing the weekly update.

I have some questions and concerns, which I have shown underlined and in red below. - Please clarify.

Thanks – Carolyn

From: Regan, John F NAO [mailto:John.F.Regan@nao02.usace.army.mil]
Sent: Monday, May 15, 2006 10:10 AM
To: Carolyn Turner; Price-Fay.Michelle@epamail.epa.gov; Herman,Paul
Cc: Reali, Robert S NAO; Theodore J. Meyer; Mackey, Ed; Cramer, Mark
Subject: Summary of TCRA work 5-8 thru 5-12
Importance: High

All,

Here is a summary of the activities that occurred during the first week of the TCRA.

- Installed filter fabric for road, completed road work, dis-assembled rotator arms, removed sediment/soil from arms, scanned sediment/soil and arms for potential mercury impact (results were negative), collected soil samples from potential back-fill material, and shipped to GPL for analysis.

- Set up decontamination area, delivery of first two roll-off containers and filled both containers with approximately 15 tons of stone per roll-off from Zone 2. Roll-offs were lined with plastic liner prior to placement of rock. A Lumex was used to screen rock prior to placement into each roll-off. The action level utilized was based on current toxicological information, Agency for Toxic Substances and Disease Registry (ATSDR) recommendations, and on the technical practicalities involved in cleanup of elemental (metallic) mercury releases and inorganic mercury in soils. The action level of 1,000 nanograms per cubic meter (ng/m^3) was chosen, which coincides with the residential cleanup level in air of 1,000 ng/m^3 and is based on the most conservative ATSDR document titled, Suggested Action Levels for Indoor Mercury Vapors in Homes or Businesses with Indoor Gas Regulators. Some rock from near the area of the release (approximately 5 feet), had readings above 1,000 ng/m^3 . This rock was not placed in the roll-off, and was placed back in the trickling filter Zone 2 area to allow volatilization to occur prior to re-screening.

John –

1. Using volatilization to remediate is not specified in the work

plan. My understanding is that you were planning to scan with a mercury vapor analyzer, and if mercury was visible you would vacuum. And then you would complete the mercury collection/cleanup using mercury absorbing sponges, powder, or other appropriate mechanism (page 3-3). And/or treat as potentially hazardous. I don't recall seeing anything about "mixing" with a backhoe or anything about spreading and allowing the gravel to aerate within the trickling filter.

We are not using volatilization as our remediation approach. As mercury vapors are heavier than air, over time these vapors have built up in the trickling filter. In a majority of the filter, we are encountering these vapors, and these should not have a significant impact on TCLP testing. We are scanning the rock prior to placing in the roll-offs. We are hand sorting rock in the impacted area, vacuuming visible mercury, and separating stone with amalgamated mercury for hazardous disposal. We are finding pools of mercury, some as large as 5 inches in diameter that have been vacuumed. We estimate about 5 pounds of mercury has been collected and placed in the appropriate containment. The trickling filter was assumed to be impacted with mercury from the on set of the project, and we are following the work plan to facilitate removal.

VDEQ – As Carolyn indicated, if the volatilization step was to be part of the remediation process it should have been included in the Work Plan.

USACE – As stated above, volatilization is not the chosen remedial method. The model project does not appear to have included use of a Lumex monitoring device, therefore it was not anticipated that the readings would be elevated in areas not directly in contact with elemental mercury. The rock was kept in the trickling filter, until placement in the roll-off. Rock that is in contact with elemental mercury and which has exhibited amalgamation has been drummed in lined 55-gallon containers.

VDEQ Response: Nonetheless, the volitalization step should be acknowledged in the removal action completion report. Was temporary storage in the filter necessary because the lined roll-offs on site were full and no additional roll-offs had been delivered to the site?

USACE - The After Action Report will note that some rock was spread and some volatilization may have occurred. A roll-off was on site at the end of day Friday. It is noted again, the rock that was spread out originated from areas that were not impacted by elemental mercury. The areas impacted by elementary mercury were inspected in detail, elemental mercury vacuumed, and rocks still exhibiting mercury impact were placed in lined 55-gallon drums for disposal as hazardous waste.

VDEQ Re-response: It is noted again, the act of spreading out the rock to allow it to volatize was not part of the original work plan regardless of where the rock came from. Your proposal to document the step in the After Action Report is acceptable to VDEQ.

2. If you are detecting real-time vapor readings, it is an indication of a source. I do not believe that volatilization of mercury in the filter bed is an effective or appropriate remediation method and it most likely will not volatize that quickly. The mercury that is present has been there for possibly decades and hasn't volatilized probably because it has been confined by the overlaying rocks, volatilization is low, etc. The fact that the weather had cooled off and rained heavily over the last few days will decrease the volatilization. The mixing and spreading of the gravel coupled with the rain may have lead to the spreading of the mercury throughout the trickling filter. The original COE plan was to attempt to keep the stone close to the source separate from the other areas and to work from this area out. Please clarify the following;

- With the mixing/spreading of the gravel within the trickling filter and

the locally heavy rain, was there a release?

There is not a release. The rain flowing through follows the same process now as it was prior to initiating work. The trickling filter system is operating now, and has been, the same as it was designed to function, except the pump house is no longer operational. The rain water that collects flows into the cistern in the pump house system. It is also noted that visual inspection indicates that the mercury pools uncovered Monday do not appear to have been moved or smeared.

VDEQ – Cistern? What cistern? There was no mention in the Work Plan of a cistern that collects rainwater that passed through the mercury-contaminated trickling filter media. It was my understanding that incidental rainfall would pass through the filter and would, ultimately, gravity feed to the old WWTP outfall, hence the need to sample sediment around the outfall. How do you know there was not a release from the cistern? How big (volume) is the cistern? What is it made of? Does it leak? If it does, was the leakage contaminated and where would it flow? Is the media (flooring material, soil, etc.) that any leakage contacted contaminated? What happens when/if the cistern overflows? Where does the overflow water go? Once drained, could the cistern itself be contaminated with Hg? Is the cistern to be demolished and disposed in this TCRA? If not, why not?

USACE – The pump house process is mentioned in Section 2.2.1, but the word "cistern" was not specifically noted. The cistern is located in the pump house (referenced as the pump house water), which was designed and utilized to pump water from the trickling filter back to the final clarifier tank, which then released the water to the outfall pipe. The cistern dimensions are 16.87 feet to the bottom, 17 and ½ feet in length and 6 feet wide. Currently, standing water is one foot above the overflow pipe, but water is not flowing into the overflow pipe, as the water level in the cistern is static. Therefore, it can be assumed that the pipe was plugged at some point and that there has not been a release from current or past activities. It is assumed that what water does flow into the cistern evaporates at a rate equal to the flow into it. The cistern appears to have been constructed in the same manner as the trickling filter, which does not exhibit signs of distress. A Lumex reading taken this morning (<100 nm/m3) indicates that there is not impact in the cistern. Additionally, elemental mercury has not been seen in the trickling filter, downgradient of the center pedestal. It is noted that a Site Investigation is planned for the site, and the immediate concern is the removal of the trickling filter. USACE and WESTON are using drawings to determine the outfall location of the overflow pipe, and a visual search of the area has not revealed indications of water flowing out from the end of the overflow pipe. The pipe was constructed of vitreous clay, which has most likely collapsed or been plugged so a magnetometer will not be useful in locating the pipe. USACE and WESTON will collect a soil sample at this outfall during this removal effort. The pump house demolition is not currently part of this removal effort, as it is assumed that the pump house has not been impacted. If the results of currently planned waste characterization do not pass waste characterization levels, the USACE representative will contact the USACE Project manager, who will then contact the team members so that appropriate actions can be developed.

VDEQ Response: Based on the observations made on site and the flow diagram provided, it seems there are a few issues associated with the cistern that should be resolved during this TCRA. In addition to locating the WWTP outfall, the discharge point for the cistern overflow should be located as Hg contaminated water may have been released during plant operation via that pathway. Also, the plugs for each line exiting the cistern should be located to verify your assumption. If the plugs cannot be found, it could be assumed that collapsed pipes halt the flow and may be posing an immediate risk to human health and the environment depending on whether the cistern water is contaminated and is being released. Finally, the cistern may need to be pumped out to determine if elemental mercury lies on its bottom. Is the cistern an enclosed tank or an open pool? Does it pose a drowning hazard to human or eco receptors? Where is the overflow pipe in relation to the top of the cistern? Could you tell if the bottom is flat or does it form a Vee?

USACE - The overflow discharge line is/was made of clay. Attempts will be made to locate the discharge point, but the drawing does not specify the location, and it can be assumed that the clay pipe has long since collapsed. It is noted that the water level in the cistern is static (i.e. is not changing), which indicates that water is not exiting the cistern. Elemental mercury has not been observed in the trickling filter, downgradient of the center pedestal in the trench or in the wet well. Based on these two factors, it is unlikely that water is exiting the cistern and posing a risk to human health and/or the environment. Waste characterization samples will be collected on 18 May 2006 to verify this assumption. Based on the results of this testing, the USACE

representative will contact the USACE Project manager, who will then contact the team members so that appropriate actions can be developed. The cistern is partially covered by decaying wood. The entry way into the pump house will be blocked prior to the completion of site activities, and caution tape placed in the area. According to the drawing, the over-flow pipe is eight feet from the top of the cistern, and the bottom is flat. It is noted that these measurements were collected from the doorway side.

VDEQ Re-response: Response accepted.

- Did you cover "Zone 2" ? If yes, then did it really volatilize? What value/reading will you use for disposal (the higher? Or the lower?)

Portions of Zone 2 were utilized during this process, and as visible mercury was not present Zone 2 areas were not covered. Visible mercury was not present in the rock that was spread. We also have not initiated final decontamination of the trickling filter bed, but will do so prior to breaking the concrete. Mercury did not volatilize from the rock to a measurable extent (i.e. readings were similar Friday and Monday morning). We are using TCLP as the final test to determine where disposal will occur. TCLP results below 0.2 mg/L will determine non-hazardous removal. If the TCLP results of the stone exceed this value, we will dispose of or treat further accordingly.

VDEQ – According to the Work Plan, Section 3.2, page 3-4, last bullet, "the trickling filter tank will be covered with a tarp overnight during the removal and when work is not being conducted TO PREVENT RAIN and/or debris from COLLECTING IN OR COMING INTO CONTACT WITH THE TRICKLING FILTER TANK OR ITS CONTENTS." Selective covering of the trickling filter was not presented in the Work Plan. This, like the volitalization step, is a change to the Work Plan that was approved by VDEQ, EPA, and NASA. As such, we should have been notified prior to these actions and allowed to comment and weigh in on the decision to move forward in a manner other than that spelled out in the Work Plan.

USACE – WESTON apologizes for this inadvertent issue that has caused concern. Zone 1 rock in the 5-foot radius of the mercury seal release location has been continuously covered, except when removal effort has been conducted. Elemental mercury has not been mobilized during this process, and the removal has been conducted utilizing a stone by stone examination, as presented in the work plan. Incidental volatilization may occur during the removal process, and steps have been taken, and will continue to be taken to minimize water from coming into contact with the rock and sludge. At this point, a majority of the rock has been removed from the trickling filter and placed in lined/covered roll-offs. We are excavating, visually inspecting, and scanning rock/sludge that is in the trench this afternoon. Visible elemental mercury has been vacuumed prior to sludge/rock placement in lined 55-gallon drums. Down-gradient portions of the trench did not exhibit indications of elemental mercury, but further effort is ongoing. This material will be sampled for waste characteristics after removal has been completed.

VDEQ Response: The post-TCRA report should address all variations to the work plan and provide explanations as necessary.

USACE – The report will be presented accordingly, indicating that some rock was spread to and some volatilization may have occurred. It is noted again, the rock that was spread out originated from areas that were not impacted by elemental mercury. The areas impacted by elementary mercury were inspected in detail, elemental mercury vacuumed, and rocks still exhibiting mercury impact were placed in lined 55-gallon drums for disposal as hazardous waste.

VDEQ RE-response: See re-response to comment #1 above.

- Where does the underdrain system flow? Have you checked the discharge area (wet well?). Was there any release ?

The under drain flows to the wet well, and then into the cistern in the pumphouse. As no standing water has been visible in the trickling filter, we can estimate that water has been flowing past the mercury into the wet well and then to the cistern for years. It is also noted that we intend to sample the water in the cistern, as indicated in the work plan. There has not been a release of mercury outside of the above noted system during this removal effort.

VDEQ – What section(s) of the Work Plan describe the cistern and the sampling of water it may contain? Again, how do you know there wasn't a release from the system? Did you conduct visual observations of the water level in the cistern before and after the rainfall?

USACE - Section 4.3.11 discusses the pump house sampling. It is noted that since there is direct contact between the pump house cistern and the trickling filter, the waste characterization samples will be collected. The roof of the pump house has fallen in, and access is limited to the entry area. USACE and WESTON have collected the above noted information, and there does not appear to be impact to the water, but further sampling will be conducted this week. The pump house cistern has water in it, so it is assumed that the pipe is plugged and a release has not occurred. The Site Investigation will include a monitoring well in close proximity and down gradient of the pump house.

- Is the COE using this approach of volatilization to avoid hazardous waste disposal charges for the gravel?

USACE is not using volatilization to avoid hazardous waste disposal. The results of TCLP will determine the appropriate method of disposal. It is noted that the model project did not utilize a Lumex during the removal, and rock during that process was deemed non-hazardous. The Lumex takes readings in the nanogram per meter cubed range, which is very conservative when compared to TCLP values. We are conducting our removal effort to ensure a safe, environmentally sound, and effective removal of the mercury from the site.

2. In addition, as the property owner, NASA will document and report this Hazardous Air Pollutant release (unpredicted HAPS release) as part of our air permit requirement. This will be a courtesy notification - NASA does not anticipate this to have a substantial impact on our facility permit but want to extend the courtesy to our Virginia DEQ Air Program regulator.

It is noted that the amount of volatilization has been and is minimal during this process. NASA may notify the DEQ as considered appropriate. Please note that the amount of mercury released to the air is minimal compared to air permit regulatory thresholds. The maximum amount of mercury stated to originally be present in the design was 22 pounds, of which we collected approximately 5 pounds, and very little of this is assumed to have volatilized. As previously indicated, Lumex readings were similar on Monday to the readings on Friday.

- Delivery of three roll-off containers (3 through 5). Filled three containers with approximately 15 tons of stone per roll-off from Zone 2. Roll-offs were lined with plastic liner prior to placement of rock. A Lumex was used to screen rock prior to placement into each roll-off. The action level utilized was 1,000 ng/m^3. The total stone volume for the day was approximately 45 tons. Total removed to date is approximately 75 tons.

- Delivery of three roll-off containers (6 through 9). Filled one container with approximately 15 tons of stone from Zone 2. Roll-off number 7 partially filled with rock from Zone 1. Roll-offs were lined with plastic liner prior to placement of rock. A Lumex was used to screen rock prior to placement into each roll-off. The action level utilized was 1,000 ng/m^3. The total stone volume for the day was approximately 20 tons. Total removed to date is approximately 95 tons. Zone 1 rock exhibited Lumex readings of approximately 10,000 ng/m^3. Therefore, this rock was mixed by the backhoe and spread out in Zone 2 to aerate over the weekend. Additionally, rock was hand sorted in Zone 1 directly below the mercury valve area. Elemental mercury was vacuumed and placed in the 85 gallon over-pack drum. The rock, which had some amalgamated mercury attached, was placed in a lined 55-gallon drum, and will be sent off site as hazardous waste.

See comments above:

Also, the contractor has had difficulty locating the outfall where sampling was to take place in accordance with the work plan. There is a 5ft. storm water outfall near where the outfall for the trickling filter could be but this outfall also catches run-off from the runway and we feel that sampling there would yield misleading results. USACE is proposing the sampling be done during the SI, since it is not critical to the work being done now. We would like to get concurrence from NASA, EPA and VDEQ to defer the sampling of the outfall to the SI phase.

John – based on what I read above and with all the rain we have had, I believe this work is critical to the work being done right now. The COE should follow the pipe, with a magnetometer, and sample the end point.

USACE will proceed with this sampling, as indicated in the work plan. It is noted, however, that water from the trickling filter was not pumped to the final clarifier tank, from which the outfall pipe leads, so there is not a potential for release through the outfall pipe, since the time when the WWTP was operational.

VDEQ – Please provide a clear schematic of the old WWTP from the point where influent enters the treatment works to where effluent is released to the environment. If the route rainwater entering the trickling filter now differs from the route wastewater would have taken when the plant was operating, clearly show the difference in the route. Be sure to clearly show the role the cistern plays in each.

USACE – Attached, please find a schematic for the system. The process does not now differ from the designed flow route, with the exception that the pump house is non-operational, and therefore does not pump the water back to the clarifier for release to the outfall pipe.

Please call if you have any questions. Thanks for your cooperation in this matter.

John F. Regan, P.E.
FUDS Project Manager, Projects Branch
USACE Norfolk District
voice: 757-201-7094
fax: 757-201-7875
cell: 757-575-6716

Mackey, Ed

From: Carolyn Turner [Carolyn.Turner-1@nasa.gov]
Sent: Wednesday, May 17, 2006 8:21 AM
To: 'Regan, John F NAO'
Cc: 'Herman,Paul'; Price-Fay.Michelle@epamail.epa.gov; 'Reali, Robert S NAO'; 'Fromme, Cheryl L NAO'; 'Theodore J. Meyer'; Mackey, Ed; Cramer, Mark
Subject: RE: Summary of TCRA work 5-8 thru 5-12

John – thank you for providing these responses and keeping us up to date.
Please feel free to call should you have any questions / comments as you move forward with this project.
-Carolyn

From: Regan, John F NAO [mailto:John.F.Regan@nao02.usace.army.mil]
Sent: Tuesday, May 16, 2006 11:36 AM
To: Carolyn Turner
Cc: Herman,Paul; Price-Fay.Michelle@epamail.epa.gov; Reali, Robert S NAO; Fromme, Cheryl L NAO; Theodore J. Meyer; Mackey, Ed; Cramer, Mark
Subject: FW: Summary of TCRA work 5-8 thru 5-12
Importance: High

Carolyn,

See our responses to your questions below in green.

John F. Regan, P.E.
FUDS Project Manager, Projects Branch
USACE Norfolk District
voice: 757-201-7094
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Subject: RE: Summary of TCRA work 5-8 thru 5-12
Importance: High

John – Thank you for providing the weekly update.

I have some questions and concerns, which I have shown underlined and in red below. - Please clarify.

Thanks – Carolyn

From: Regan, John F NAO [mailto:John.F.Regan@nao02.usace.army.mil]
Sent: Monday, May 15, 2006 10:10 AM
To: Carolyn Turner; Price-Fay.Michelle@epamail.epa.gov; Herman,Paul
Cc: Reali, Robert S NAO; Theodore J. Meyer; Mackey, Ed; Cramer, Mark

Subject: Summary of TCRA work 5-8 thru 5-12
Importance: High

All,

Here is a summary of the activities that occurred during the first week of the TCRA.

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- Set up decontamination area, delivery of first two roll-off containers and filled both containers with approximately 15 tons of stone per roll-off from Zone 2. Roll-offs were lined with plastic liner prior to placement of rock. A Lumex was used to screen rock prior to placement into each roll-off. The action level utilized was based on current toxicological information, Agency for Toxic Substances and Disease Registry (ATSDR) recommendations, and on the technical practicalities involved in cleanup of elemental (metallic) mercury releases and inorganic mercury in soils. The action level of 1,000 nanograms per cubic meter (ng/m^3) was chosen, which coincides with the residential cleanup level in air of 1,000 ng/m^3 and is based on the most conservative ATSDR document titled, Suggested Action Levels for Indoor Mercury Vapors in Homes or Businesses with Indoor Gas Regulators. Some rock from near the area of the release (approximately 5 feet), had readings above 1,000 ng/m^3. This rock was not placed in the roll-off, and was placed back in the trickling filter Zone 2 area to allow volatilization to occur prior to re-screening.

John –

1. Using volatilization to remediate is not specified in the work plan. My understanding is that you were planning to scan with a mercury vapor analyzer, and if mercury was visible you would vacuum. And then you would complete the mercury collection/cleanup using mercury absorbing sponges, powder, or other appropriate mechanism (page 3-3). And/or treat as potentially hazardous. I don't recall seeing anything about "mixing" with a backhoe or anything about spreading and allowing the gravel to aerate within the trickling filter.

We are not using volatilization as our remediation approach. As mercury vapors are heavier than air, over time these vapors have built up in the trickling filter. In a majority of the filter, we are encountering these vapors, and these should not have a significant impact on TCLP testing. We are scanning the rock prior to placing in the roll-offs. We are hand sorting rock in the impacted area, vacuuming visible mercury, and separating stone with amalgamated mercury for hazardous disposal. We are finding pools of mercury, some as large as 5 inches in diameter that have been vacuumed. We estimate about 5 pounds of mercury has been collected and placed in the appropriate containment. The trickling filter was assumed to be impacted with mercury from the on set of the project, and we are following the work plan to facilitate removal.

2. If you are detecting real-time vapor readings, it is an indication of a source. I do not believe that volatilization of mercury in the filter bed is an effective or appropriate remediation method and it most likely will not volatize that quickly. The mercury that is present has been there for possibly decades and hasn't volatilized probably because it has been confined by the overlaying rocks, volatilization is low, etc. The fact that the weather had cooled off and rained heavily over the last few days will decrease the volatilization. The mixing and spreading of the gravel coupled with the rain may have lead to the spreading of the mercury throughout the trickling filter. The original COE plan was to attempt to keep the stone close to the source separate from the other areas and to work from this area out. Please clarify the following;

- With the mixing/spreading of the gravel within the trickling filter and the locally heavy rain, was there a release?

There is not a release. The rain flowing through follows the same process now as it was prior to initiating work. The trickling filter system is operating now, and has been, the same as it was designed to function, except the pump house is no longer operational. The rain water that collects flows into the cistern in the pump house system. It is also noted that visual inspection indicates that the mercury pools uncovered Monday do not appear

to have been moved or smeared.

- Did you cover "Zone 2" ? If yes, then did it really volatilize? What value/reading will you use for disposal (the higher? Or the lower?)

Portions of Zone 2 were utilized during this process, and as visible mercury was not present Zone 2 areas were not covered. Visible mercury was not present in the rock that was spread. We also have not initiated final decontamination of the trickling filter bed, but will do so prior to breaking the concrete. Mercury did not volatilize from the rock to a measurable extent (i.e. readings were similar Friday and Monday morning). We are using TCLP as the final test to determine where disposal will occur. TCLP results below 0.2 mg/L will determine non-hazardous removal. If the TCLP results of the stone exceed this value, we will dispose of or treat further accordingly.

- Where does the underdrain system flow? Have you checked the discharge area (wet well?). Was there any release ?

The under drain flows to the wet well, and then into the cistern in the pumphouse. As no standing water has been visible in the trickling filter, we can estimate that water has been flowing past the mercury into the wet well and then to the cistern for years. It is also noted that we intend to sample the water in the cistern, as indicated in the work plan. There has not been a release of mercury outside of the above noted system during this removal effort.

- Is the COE using this approach of volatilization to avoid hazardous waste disposal charges for the gravel?

USACE is not using volatilization to avoid hazardous waste disposal. The results of TCLP will determine the appropriate method of disposal. It is noted that the model project did not utilize a Lumex during the removal, and rock during that process was deemed non-hazardous. The Lumex takes readings in the nanogram per meter cubed range, which is very conservative when compared to TCLP values. We are conducting our removal effort to ensure a safe, environmentally sound, and effective removal of the mercury from the site.

2. In addition, as the property owner, NASA will document and report this Hazardous Air Pollutant release (unpredicted HAPS release) as part of our air permit requirement. This will be a courtesy notification - NASA does not anticipate this to have a substantial impact on our facility permit but want to extend the courtesy to our Virginia DEQ Air Program regulator.

It is noted that the amount of volatilization has been and is minimal during this process. NASA may notify the DEQ as considered appropriate. Please note that the amount of mercury released to the air is minimal compared to air permit regulatory thresholds. The maximum amount of mercury stated to originally be present in the design was 22 pounds, of which we collected approximately 5 pounds, and very little of this is assumed to have volatilized. As previously indicated, Lumex readings were similar on Monday to the readings on Friday.

- Delivery of three roll-off containers (3 through 5). Filled three containers with approximately 15 tons of stone per roll-off from Zone 2. Roll-offs were lined with plastic liner prior to placement of rock. A Lumex was used to screen rock prior to placement into each roll-off. The action level utilized was 1,000 ng/m^3 . The total stone volume for the day was approximately 45 tons. Total removed to date is approximately 75 tons.

- Delivery of three roll-off containers (6 through 9). Filled one container with approximately 15 tons of stone from Zone 2. Roll-off number 7 partially filled with rock from Zone 1. Roll-offs were lined with plastic liner prior to placement of rock. A Lumex was used to screen rock prior to placement into each roll-off. The action level utilized was 1,000 ng/m^3 . The total stone volume for the day was approximately 20 tons. Total removed to date is approximately 95 tons. Zone 1 rock exhibited Lumex readings of approximately 10,000 ng/m^3. Therefore, this rock was mixed by the backhoe and spread out in Zone 2 to aerate over the weekend. Additionally, rock was hand sorted in Zone 1 directly below the mercury valve area. Elemental mercury was vacuumed and placed in the 85 gallon over-pack drum. The rock, which had some amalgamated mercury attached, was placed in a lined 55-gallon drum, and will be sent off site as hazardous waste.

See comments above:

Also, the contractor has had difficulty locating the outfall where sampling was to take place in accordance with the work plan. There is a 5ft. storm water outfall near where the outfall for the trickling filter could be but this outfall also catches run-off from the runway and we feel that sampling there would yield misleading results. USACE is proposing the sampling be done during the SI, since it is not critical to the work being done now. We would like to

get concurrence from NASA, EPA and VDEQ to defer the sampling of the outfall to the SI phase.

John – based on what I read above and with all the rain we have had, I believe this work is critical to the work being done right now. The COE should follow the pipe, with a magnetometer, and sample the end point.

USACE will proceed with this sampling, as indicated in the work plan. It is noted, however, that water from the trickling filter was not pumped to the final clarifier tank, from which the outfall pipe leads, so there is not a potential for release through the outfall pipe, since the time when the WWTP was operational.

Please call if you have any questions. Thanks for your cooperation in this matter.

John F. Regan, P.E.
FUDS Project Manager, Projects Branch
USACE Norfolk District
voice: 757-201-7094
fax: 757-201-7875
cell: 757-575-6716